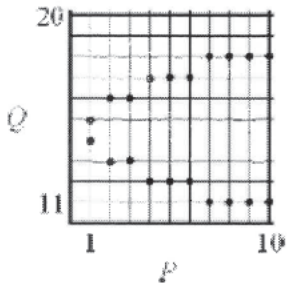
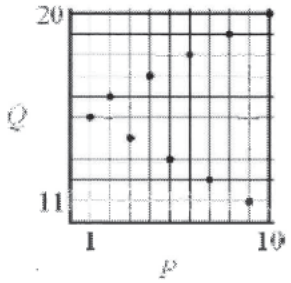
1. Given $P = \{1, 2, 3 \ldots 10\}$,
$Q = \{11, 12, 13 \ldots 20\}$,

Which of the following three relations from P to Q illustrated in the graphs are mappings?

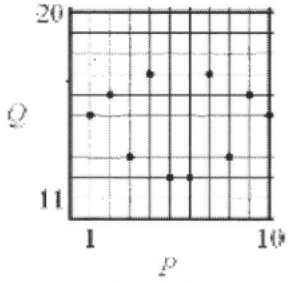
(1)



(2)



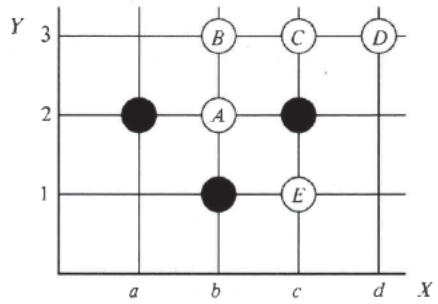
(3)



A. (2) only
B. (1) and (2) only
C. (1) and (3) only
D. (2) and (3) only
E. (1), (2) and (3)

[1972-CE-MATHS B1-10]

2.



$X = \{a, b, c, d\}$. $Y = \{1, 2, 3\}$.

In the above figure, which one of the lettered circles should be blackened so that the graph represents a map from X into Y?

A. A
B. B
C. C
D. D
E. E

[SP-CE-MATHS 2-56]

3. If $f(x) = \frac{1}{x+1}$, then $f(\frac{1}{x+1}) =$

A. x.
B. $x + 1$.
C. $\frac{1}{x}$.
D. $\frac{x}{x+1}$.
E. $\frac{x+1}{x+2}$.

[1978-CE-MATHS 2-37]

4. If $f(x) = x^2 + x + 1$, then $f(x + 1) - f(x) =$

A. 1.
B. 3.
C. $2x + 1$.
D. $2x + 2$.
E. $x^2 + x + 1$.

[1981-CE-MATHS 2-7]

5. If $f(x) = 5^x + 1$, then $f(x + 1) - f(x) =$

A. 1.
B. 6.
C. $4 \cdot 5^x$.
D. $5 \cdot 5^x$.
E. $4 \cdot 5^x + 1$.

[1982-CE-MATHS 2-29]

6. A function $f(x)$ is called an even function if $f(x) = f(-x)$. Which of the following functions is/are even functions?

(1) $f_1(x) = \frac{1}{x}$
(2) $f_2(x) = x^2$
(3) $f_3(x) = x^3$

A. (1) only
B. (2) only
C. (3) only
D. (1) and (2) only
E. (2) and (3) only

[1983-CE-MATHS 2-37]

7. If $f(x) = (\log_{10} 2x) - x$, then $f(x + 1) - f(x) =$

A. $\log_{10} 2 - 1$.
B. $\log_{10} \frac{x+1}{x}$.
C. $\log_{10} \frac{10(x+1)}{x}$.
D. $\log_{10} \frac{x+1}{10x}$.
E. $\log_{10} \frac{x+1}{x} - 2x$.

[1984-CE-MATHS 2-36]

8. If $f(2x) = 8x^3 + 4x$, then $f(3a) =$

A. $9a^3 + 6a$.
B. $12a^3 + 6a$.
C. $27a^3 + 6a$.
D. $108a^3 + 6a$.
E. $216a^3 + 12a$.

[1985-CE-MATHS 2-40]

9. If $f(x) = x^2 + 1$, then $f(x - 1) =$

A. x^2.
B. $x^2 - 1$.
C. $x^2 + 2$.
D. $x^2 - 2x$.
E. $x^2 - 2x + 2$.

[1987-CE-MATHS 2-10]

10. If $f(x) = 3 + 2^x$, then $f(2x) - f(x) =$

A. 2^x.
B. 2^{3x}.
C. $3 + 2^x$.
D. $2^x(2^x + 1)$.
E. $2^x(2^x - 1)$.

[1988-CE-MATHS 2-34]

11. If $f(x) = \frac{x}{1-x}$, then $f(\frac{1}{x}) =$

A. $\frac{1}{x-1}$.
B. $\frac{1}{1-x}$.
C. $\frac{x}{x-1}$.
D. $\frac{x}{1-x}$.
E. $\frac{1-x}{x}$.

[1989-CE-MATHS 2-4]

12. If $f(n) = \frac{1}{2}n(n-1)$, then $f(n+1) - f(n) =$

A. $f(1)$.
B. $f(n)$.
C. $\frac{n}{2}$.
D. 1.
E. n.

[1990-CE-MATHS 2-4]

13. If $f(x) = x - \frac{1}{x}$, then $f(x) - f(\frac{1}{x}) =$

A. 0.
B. $2x$.
C. $-\frac{2}{x}$.
D. $2(x - \frac{1}{x})$.
E. $2(\frac{1}{x} - x)$.

[1991-CE-MATHS 2-35]

14. If $f(x) = 10^{2x}$, then $f(4y) =$

A. 10^{4y}.
B. 10^{2+4y}.
C. 10^{8y}.
D. 40^{y}.
E. 40^{2y}.

[1993-CE-MATHS 2-1]

15. If $f(x) = x^2 + 2x$, then $f(x - 1) =$

A. x^2.
B. $x^2 - 1$.
C. $x^2 + 2x - 1$.
D. $x^2 + 2x - 3$.
E. $x^2 + 4x - 1$.

[1994-CE-MATHS 2-1]

16. If $f(x) = \frac{x}{1-x}$, then $f(\frac{1}{x})f(-x) =$

A. $-\frac{1}{2}$.
B. -1.
C. $-\frac{1-x}{1+x}$.
D. $\frac{x}{1-x^2}$.
E. $\frac{x}{x^2-1}$.

[1995-CE-MATHS 2-35]

17. If $f(x) = 3x^2 + bx + 1$ and $f(x) = f(-x)$, then $f(-3) =$

A. -26.
B. 0.
C. 3.
D. 25.
E. 28.

[1997-CE-MATHS 2-27]

18. If $f(x) = x^2 - 3x - 1$, then $f(a) + f(-a) =$

A. $2a^2$.
B. $2a^2 - 2$.
C. $6a$.
D. $-6a$.
E. -2.

[1998-CE-MATHS 2-2]

19. If $f(x) = x^2 - 1$, then $f(a - 1) =$

A. $a^2 - 2a$.
B. $a^2 - 3a$.
C. $a^2 - 3a - 2$.
D. $a^2 - 1$.
E. $a^2 - 2$.

[1999-CE-MATHS 2-1]

20. Let $f(x) = 3x^2 + ax - 7$. If $f(-1) = 0$, find $f(-2)$.

A. -27
B. -11
C. -3
D. 1
E. 13

[2000-CE-MATHS 2-4]

21. Let $f(x) = x^2 - x - 3$. If $f(k) = k$, then $k =$

A. 1.
B. -1 or 3.
C. -3 or 1.
D. $-\sqrt{3}$ or $\sqrt{3}$.

[2002-CE-MATHS 2-2]

22. If $f(x) = 2x^2 + kx - 1$ and $f(-2) = f(\frac{1}{2})$, then $k =$

A. $\frac{-17}{3}$.
B. -5.
C. 3.
D. $\frac{31}{5}$.

[2003-CE-MATHS 2-1]

23. If $f(x) = x^2 - x + 1$, then $f(x + 1) - f(x) =$

A. 0.
B. 2.
C. $2x$.
D. $4x$.

[2004-CE-MATHS 2-3]

24. If $f(x) = 2x^2 - 3x + 4$, then $f(1) - f(-1) =$

A. -6.
B. -2.
C. 2.
D. 6.

[2005-CE-MATHS 2-3]

25. If $f(x) = \frac{x}{1+x}$, then $f(3)f(\frac{1}{3}) =$

A. $\frac{3}{16}$.
B. $\frac{1}{2}$.
C. $\frac{3}{4}$.
D. 1.

[2006-CE-MATHS 2-5]

26. Let $f(x) = x^2 - ax + 2a$, where a is a constant. If $f(-3) = 29$, then $a =$

A. -38.
B. -20.
C. -4.
D. 4.

[2007-CE-MATHS 2-8]

27. Let $f(x) = x^2 + kx + 7$, where k is a constant. If $f(4) - f(3) = 21$, then $k =$

A. 0.
B. 4.
C. 14.
D. 28.

[2008-CE-MATHS 2-6]

28. Let $f(x) = x^2 - 9x + c$, where c is a constant. If $f(-1) = 8$, then $c =$

A. -2.
B. 0.
C. 16.
D. 18.

[2009-CE-MATHS 2-6]

29. If $f(x) = x^2 - 3x + 17$, then $3f(2) - 1 =$

A. 27.
B. 34.
C. 44.
D. 70.

[2010-CE-MATHS 2-6]

30. Let $f(x) = x^2 + 2x + k$, where k is a constant. Find $f(5) - f(3)$.

A. 20
B. $k + 8$
C. $k + 35$
D. $2k + 50$

[2011-CE-MATHS 2-8]

HKDSE Problems

31. Let k be a constant. If $f(x) = 2x^2 - 5x + k$, then $f(2) - f(-2) =$

A. -20.
B. 0.
C. 16.
D. $2k$.

[2017-DSE-MATHS 2-6]

32. If $f(x) = 3x^2 - 2x + 1$, then $f(2m - 1) =$

A. $6m^2 - 4m + 2$
B. $6m^2 - 4m + 6$
C. $12m^2 - 16m + 2$
D. $12m^2 - 16m + 6$

[2018-DSE-MATHS 2-7]

33. Let c be a constant. If $f(x) = x^3 + cx^2 + c$, then $f(c) + f(-c) =$

A. 0
B. $2c$
C. $2c^3 + 2c$
D. $-2c^3 + 2c$

[2019-DSE-MATHS 2-8]

34. Let $f(x) = 3x^2 - x - 2$. If β is a constant, $f(1 + \beta) - f(1 - \beta) =$

A. 2β
B. 10β
C. $6\beta^2 - 2$
D. $6\beta^2 - 26\beta^2 - 2$

[2020-DSE-MATHS 2-5]

Completing Squares

1. Which of the following functions has its minimum value of 3, when $x = 1$?

   A. $y = (x-1)^2 - 3$
   B. $y = 3 - (x-1)^2$
   C. $y = (x+1)^2 + 3$
   D. $y = 3 - (x+1)^2$
   E. $y = (x-1)^2 + 3$

   [1972-CE-MATHS B1-18]

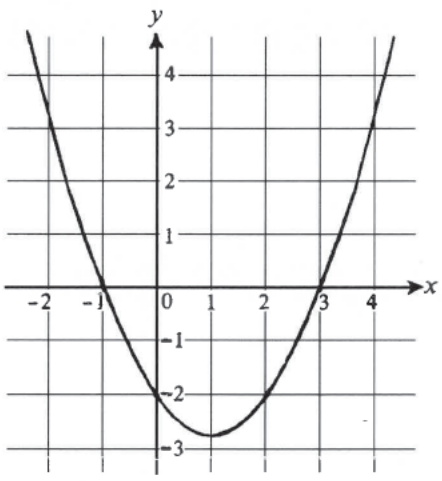
2. What number should be added to the expression $4x^2 + 12x + 2$ in order to make it a perfect square?

   A. 10
   B. 7
   C. 6
   D. 4
   E. 2

   [1979-CE-MATHS 2-48]

Properties of Quadratic Graphs

3.



The figure above shows the graph of

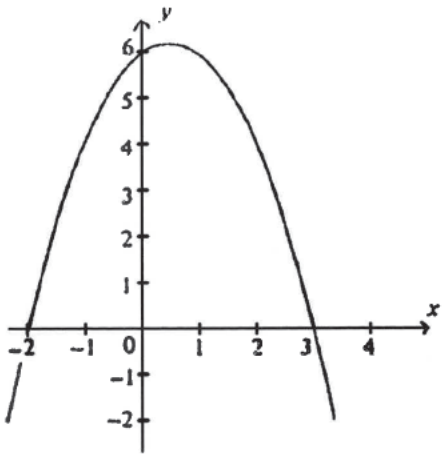
$y = px^2 + qx + r$.

The value of r is

A. -2.
B. -1.
C. 0.
D. 2.
E. 3.

[SP-CE-MATHS 2-13]

4.



The figure above shows the graph of

A. $y = (x+2)(x-3)$.
B. $y = (x-2)(x+3)$.
C. $y = (x-2)(x-3)$.
D. $y = -(x+2)(x-3)$.
E. $y = -(x-2)(x+3)$.

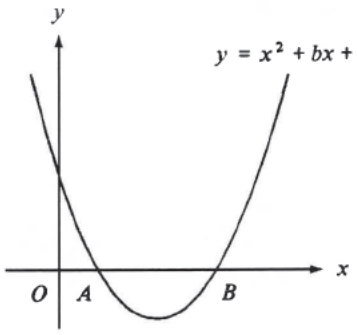
[1979-CE-MATHS 2-36]

5. The graph of $y = x^2 + ax + b$ (a and b being constants) cuts the x-axis at $(2, 0)$ and $(h, 0)$, and cuts the y-axis at $(0, -2)$. $h =$

   A. -3.
   B. -2.
   C. -1.
   D. 0.
   E. 1.

   [1984-CE-MATHS 2-34]

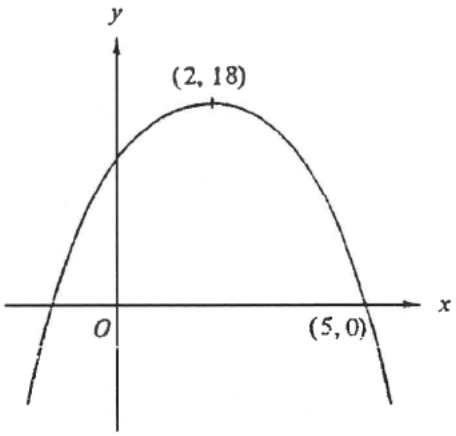
6. In the figure, the graph of $y = x^2 + bx + c$ cuts the x-axis at A and B. $OA + OB =$



   A. b.
   B. c.
   C. $-b$.
   D. $-c$.
   E. $-\frac{b}{c}$.

   [1987-CE-MATHS 2-9]

7. The figure shows the graph of a quadratic function $y = f(x)$. Given that the graph has vertex $(2, 18)$ and it cuts the x-axis at $(5, 0)$, find the quadratic function.

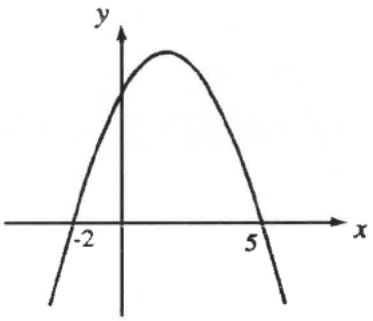


A. $y = (x - 2)^2 + 18$
B. $y = -(x - 2)^2 + 18$
C. $y = (x + 1)(x - 5)$
D. $y = -2(x + 1)(x - 5)$
E. $y = 2(x - 1)(x + 5)$

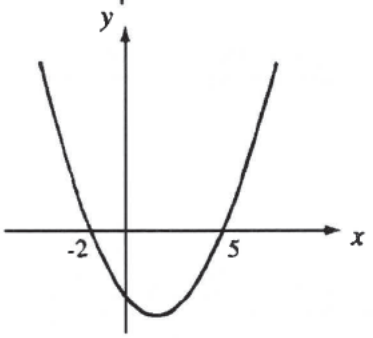
[1989-CE-MATHS 2-45]

8. Which of the following may represent the graph of $y = -x^2 + 3x + 10$?

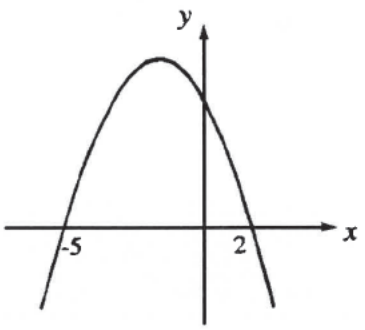
A.



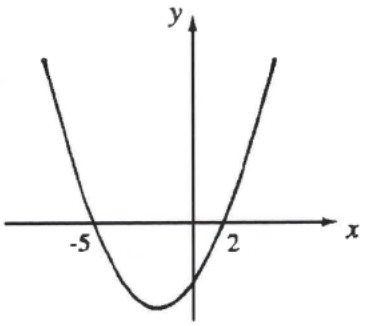
B.



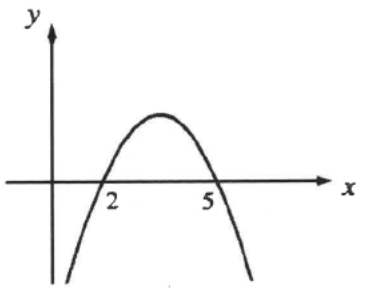
C.



D.

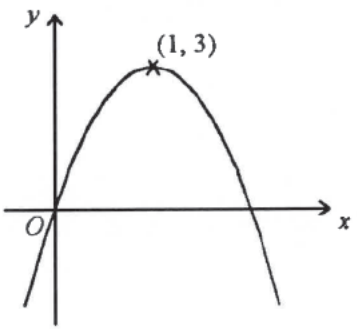


E.



[1995-CE-MATHS 2-41]

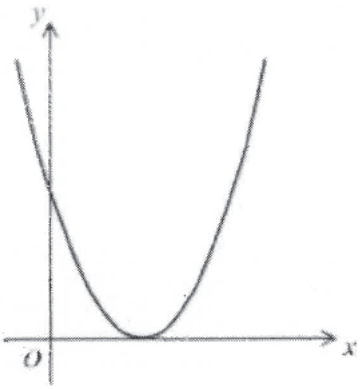
9. The figure shows the graph of a quadratic function $f(x)$. If the vertex of the graph is $(1, 3)$, then $f(x) =$



A. $-3(x - 1)^2 + 3$.
B. $-3(x + 1)^2 + 3$.
C. $-(x - 1)^2 + 3$.
D. $-(x + 1)^2 + 3$.
E. $3(x - 1)^2 - 3$.

[1997-CE-MATHS 2-34]

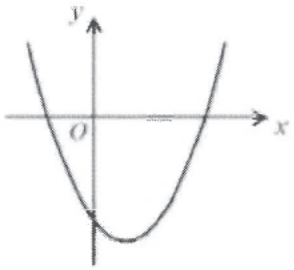
10. In the figure, the graph of $y = x^2 - 6x + k$ touches the x-axis. Find k.

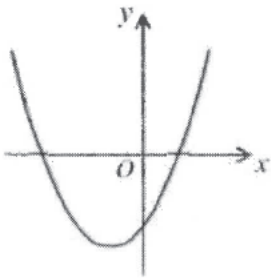


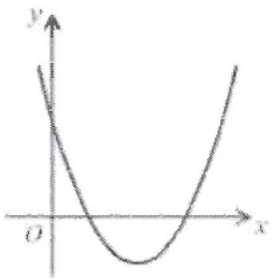
A. $k \geq 0$
B. $k \geq 9$
C. $k = -9$
D. $k = 0$
E. $k = 9$

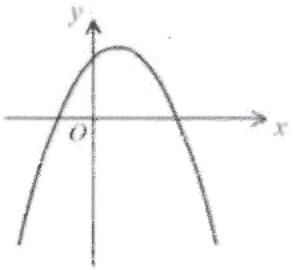
[1999-CE-MATHS 2-5]

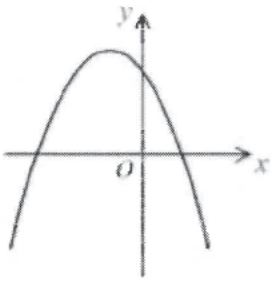
11. Which of the following may represent the graph of $y = x^2 - 3x - 18$?

A.


B.


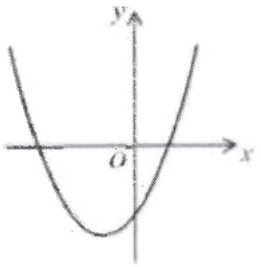
C.


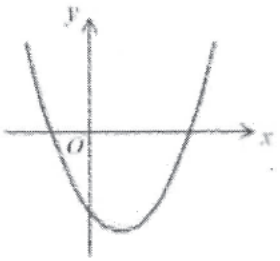
D.


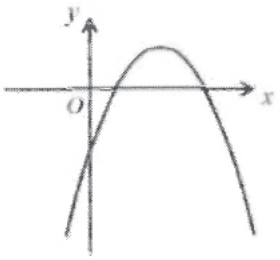
E.


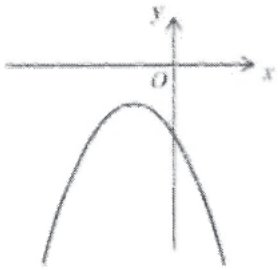
[1999-CE-MATHS 2-9]

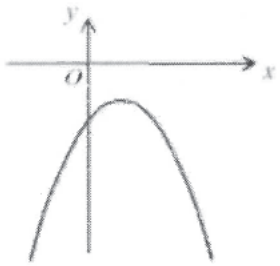
12. Which of the following may represent the graph of $y = -x^2 + 2x - 3$?

A.


B.


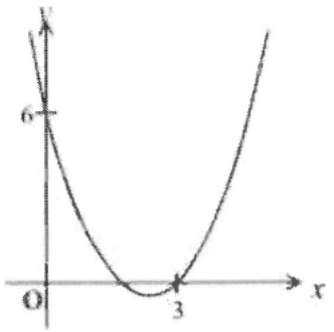
C.


D.


E.


[2000-CE-MATHS 2-39]

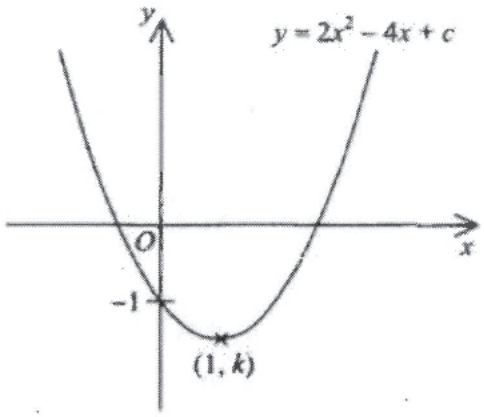
13. The figure shows the graph of $y = x^2 + bx + c$. Find b.



A. $\frac{-11}{2}$
B. -5
C. 5
D. $\frac{11}{2}$

[2002-CE-MATHS 2-5]

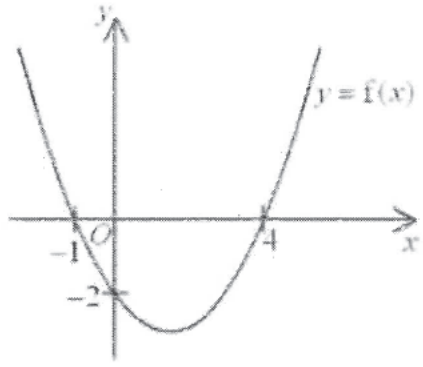
14. In the figure, the graph of $y = 2x^2 - 4x + c$ passes through the point $(1, k)$. Find the value of k.



A. -5
B. -4
C. -3
D. -2

[2004-CE-MATHS 2-5]

15. The figure shows the graph of $y = f(x)$. If $f(x)$ is a quadratic function, then $f(x) =$



A. $\frac{1}{2}(x+1)(x-4)$.
B. $2(x+1)(x-4)$.
C. $\frac{1}{2}(x-1)(x+4)$.
D. $2(x-1)(x+4)$.

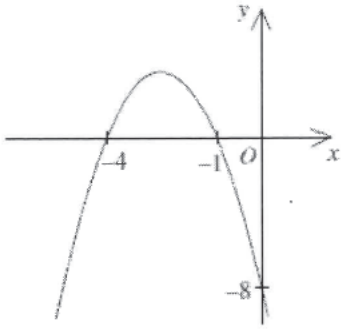
[2006-CE-MATHS 2-7]

16. Which of the following statements about the graph of $y = (x+1)^2 - 4$ is true?

A. The coordinates of the vertex of the graph are $(-1, 4)$.
B. The equation of the axis of symmetry of the graph is $x = 1$.
C. The x-intercepts of the graph are -1 and 3.
D. The y-intercept of the graph is -3.

[2007-CE-MATHS 2-5]

17. The equation of the quadratic graph shown in the figure is



A. $y = (x-1)(x-4)$.
B. $y = -(x+1)(x+4)$.
C. $y = -2(x+1)(x+4)$.
D. $y = -2(x-1)(x-4)$.

[2010-CE-MATHS 2-9]

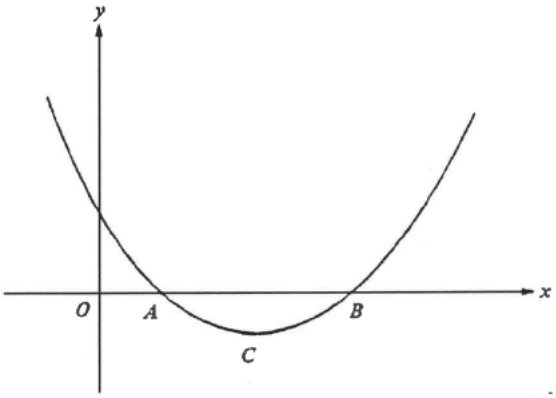
18. Which of the following statements about the graph of $y = 25 - (x-3)^2$ is true?

A. The x-intercepts of the graph are -2 and 8.
B. The y-intercept of the graph is 25.
C. The equation of the axis of symmetry of the graph is $x = -3$.
D. The y-coordinate of the vertex of the graph is 16.

[2011-CE-MATHS 2-7]

Areas in Quadratic Graphs

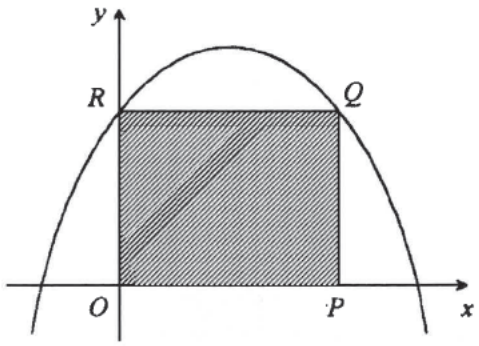
19. In the figure, the equation of the curve is $y = (x-2)^2 - 1$. The curve intersects the x-axis at A and B. C is the vertex of the curve. The area of ΔABC is



A. 1 .
B. 1.5 .
C. 2 .
D. 2.5 .
E. 3 .

[1985-CE-MATHS 2-35]

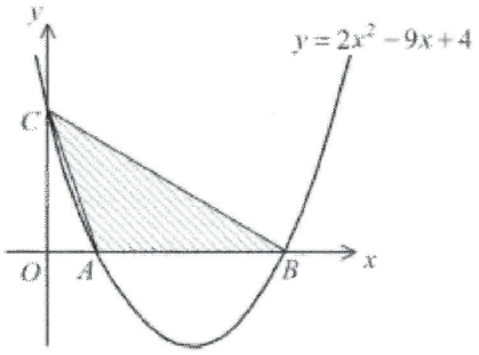
20. The curve in the figure is the graph of $y = -x^2 + bx + c$. Find the area of the rectangle $OPQR$.



A. bc
B. b^2
C. c^2
D. $b^2 - 4c$
E. $b^2 + 4c$

[1996-CE-MATHS 2-41]

21. In the figure, the graph of $y = 2x^2 - 9x + 4$ cuts the x-axis at A and B, and the y-axis at C. Find the area of ΔABC.

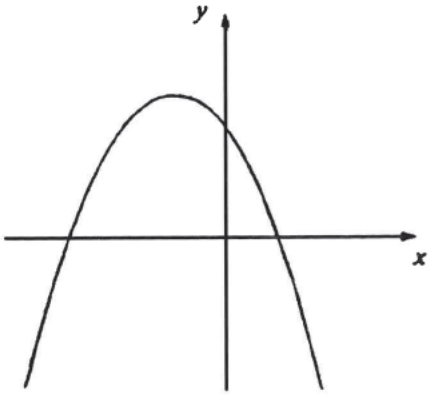


A. 4
B. 6
C. 7
D. 8
E. 14

[2001-CE-MATHS 2-23]

Sign of Coefficients in Quadratic Graphs

22.



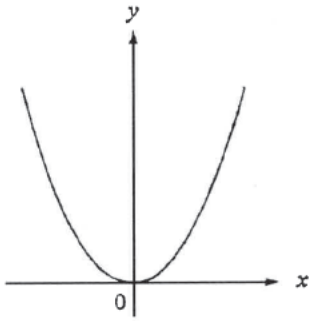
The figure above shows the graph of $y = ax^2 + bx + c$. Determine whether a and c are positive or negative.

A. $a > 0$ and $c > 0$
B. $a < 0$ and $c < 0$
C. $a > 0$ and $c < 0$
D. $a < 0$ and $c > 0$
E. it cannot be determined from the given data

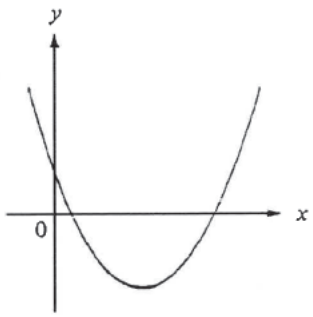
[1980-CE-MATHS 2-32]

23. If a, b and c are positive numbers, which of the following is a possible graphical representation of $y = ax^2 + bx + c$?

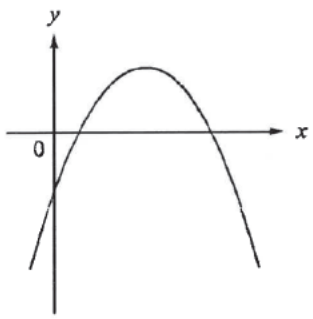
A.



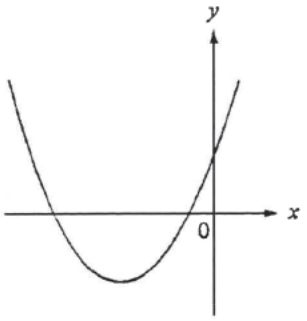
B.



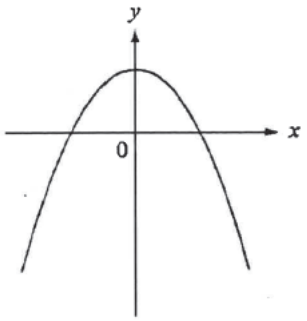
C.



D.

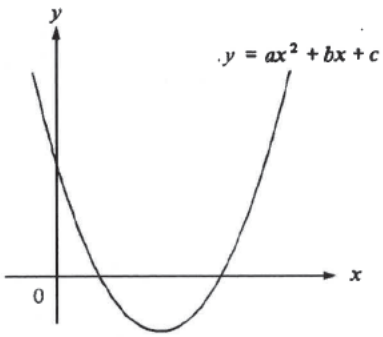


E.



[1986-CE-MATHS 2-35]

24.



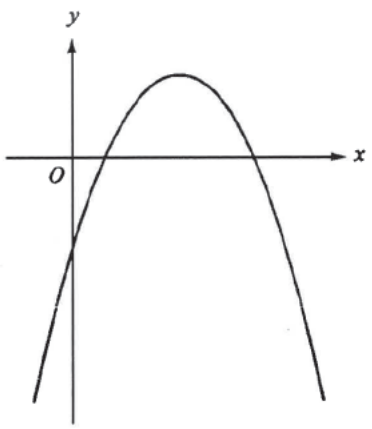
The figure shows the graph of $y = ax^2 + bx + c$. Which of the following is/are true?

(1) $a > 0$
(2) $b > 0$
(3) $c > 0$

A. (1) only
B. (1) and (2) only
C. (1) and (3) only
D. (2) and (3) only
E. (1), (2) and (3)

[1987-CE-MATHS 2-39]

25.



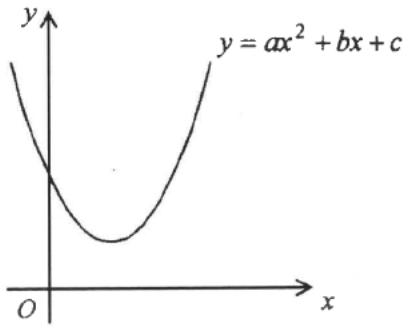
The graph of $y = ax^2 + bx + c$ is given as shown. Which of the following is/are true?

(1) $a < 0$
(2) $b < 0$
(3) $c < 0$

A. (1) only
B. (1) and (2) only
C. (1) and (3) only
D. (2) and (3) only
E. (1), (2) and (3)

[1990-CE-MATHS 2-31]

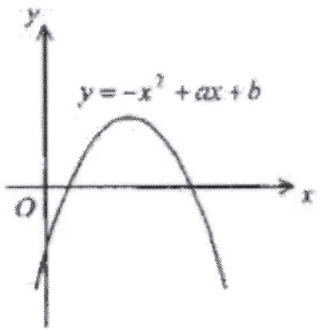
26. The figure shows the graph of $y = ax^2 + bx + c$. Which of the following is true?



A. $a > 0$, $c > 0$ and $b^2 - 4ac > 0$
B. $a > 0$, $c > 0$ and $b^2 - 4ac < 0$
C. $a > 0$, $c < 0$ and $b^2 - 4ac < 0$
D. $a < 0$, $c > 0$ and $b^2 - 4ac > 0$
E. $a < 0$, $c < 0$ and $b^2 - 4ac > 0$

[1998-CE-MATHS 2-12]

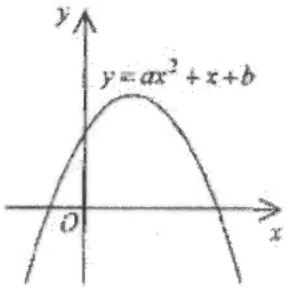
27. The figure shows the graph of $y = -x^2 + ax + b$. Which of the following is true?



A. $a < 0$ and $b < 0$
B. $a < 0$ and $b > 0$
C. $a > 0$ and $b < 0$
D. $a > 0$ and $b > 0$

[2003-CE-MATHS 2-42]

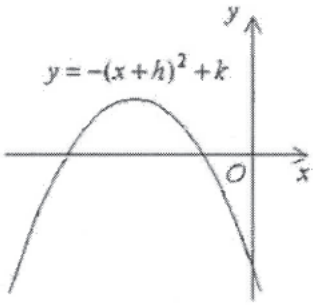
28. The figure shows the graph of $y = ax^2 + x + b$. Which of the following is true?



A. $a > 0$ and $b < 0$
B. $a > 0$ and $b > 0$
C. $a < 0$ and $b < 0$
D. $a < 0$ and $b > 0$

[2005-CE-MATHS 2-6]

29. The figure shows the graph of $y = -(x + h)^2 + k$. Which of the following must be true?

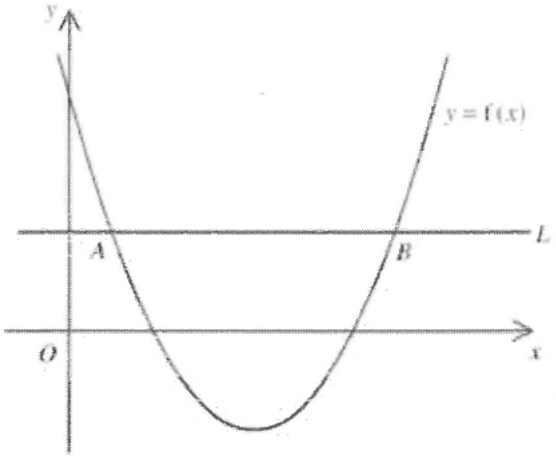


A. $h > 0$ and $k > 0$
B. $h > 0$ and $k < 0$
C. $h < 0$ and $k > 0$
D. $h < 0$ and $k < 0$

[2008-CE-MATHS 2-9]

HKDSE Problems

30.



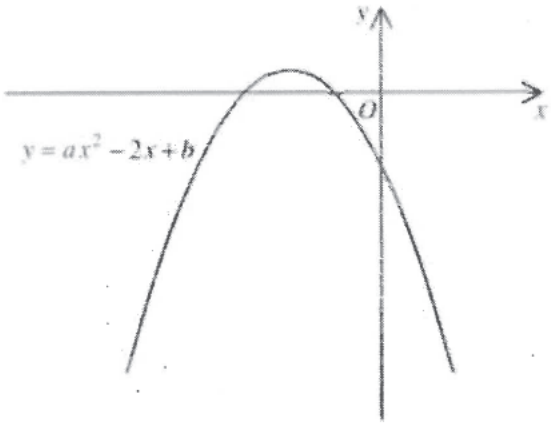
In the figure, the quadratic graph of $y = f(x)$ intersects the straight line L at $A(1, k)$ and $B(7, k)$. Which of the following are true?

(1) The solution of the inequality $f(x) > k$ is $x < 1$ or $x > 7$.
(2) The roots of the equation $f(x) = k$ are 1 and 7.
(3) The equation of the axis of symmetry of the quadratic graph of $y = f(x)$ is $x = 3$.

A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

[SP-DSE-MATHS 2-8]

31.



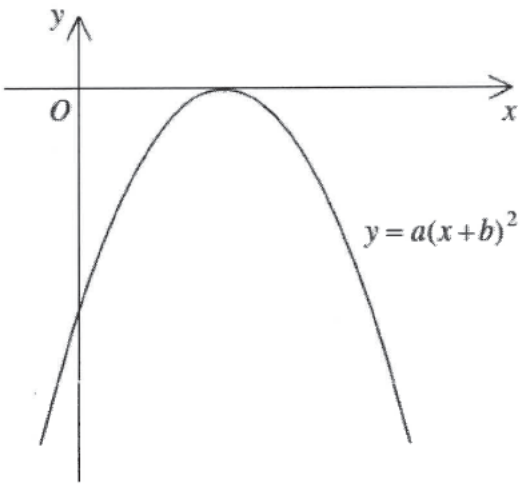
The figure shows the graph of $y = ax^2 - 2x + b$, where a and b are constants. Which of the following is/are true?

(1) $a > 0$
(2) $b < 0$
(3) $ab < 1$

A. (1) only
B. (2) only
C. (1) and (3) only
D. (2) and (3) only

[PP-DSE-MATHS 2-8]

32. The figure shows the graph of $y = a(x + b)^2$, where a and b are constants. Which of the following is true?



A. $a > 0$ and $b > 0$
B. $a > 0$ and $b < 0$
C. $a < 0$ and $b > 0$
D. $a < 0$ and $b < 0$

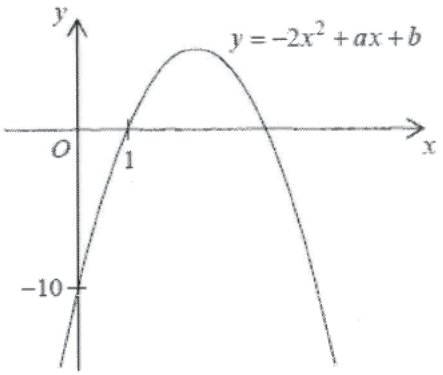
[2012-DSE-MATHS 2-6]

33. Let $f(x)$ be a quadratic function. If the coordinates of the vertex of the graph of $y = f(x)$ are $(3, -4)$, which of the following must be true?

A. The roots of the equation $f(x) = 0$ are integers.
B. The roots of the equation $f(x) - 3 = 0$ are rational numbers.
C. The roots of the equation $f(x) + 4 = 0$ are real numbers.
D. The roots of the equation $f(x) + 5 = 0$ are nonreal numbers.

[2012-DSE-MATHS 2-34]

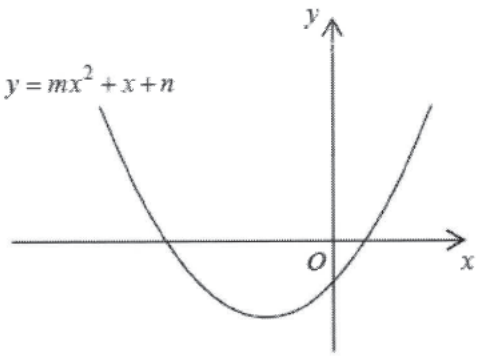
34. The figure shows the graph of $y = -2x^2 + ax + b$, where a and b are constants. The equation of the axis of symmetry of the graph is



A. $x = 2$.
B. $x = 3$.
C. $x = 5$.
D. $y = 8$.

[2013-DSE-MATHS 2-7]

35. The figure shows the graph of $y = mx^2 + x + n$, where m and n are constants. Which of the following is true?



A. $m < 0$ and $n < 0$
B. $m < 0$ and $n > 0$
C. $m > 0$ and $n < 0$
D. $m > 0$ and $n > 0$

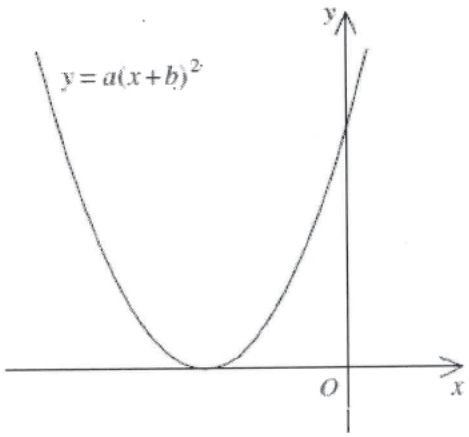
[2014-DSE-MATHS 2-5]

36. Let $f(x) = 3x^2 - 6x + k$, where k is a constant. If the y-coordinate of the vertex of the graph of $y = f(x)$ is 7, then $k =$

A. 1.
B. 3.
C. 4.
D. 10.

[2014-DSE-MATHS 2-35]

37. The figure shows the graph of $y = a(x + b)^2$, where a and b are constants. Which of the following is true?

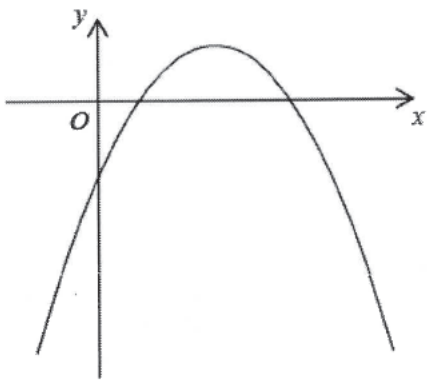


A. $a < 0$ and $b < 0$
B. $a < 0$ and $b > 0$
C. $a > 0$ and $b < 0$
D. $a > 0$ and $b > 0$

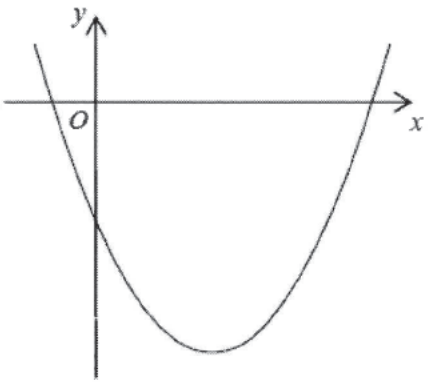
[2015-DSE-MATHS 2-8]

38. If $-1 < a < 0$, which of the following may represent the graph of $y = (ax + 1)^2 + a$?

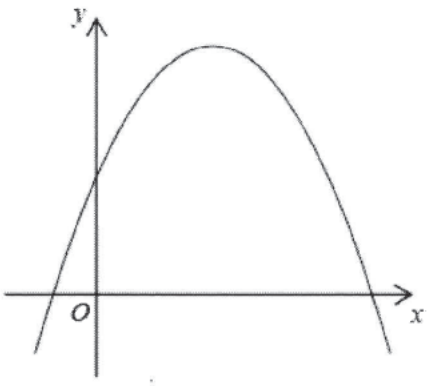
A.



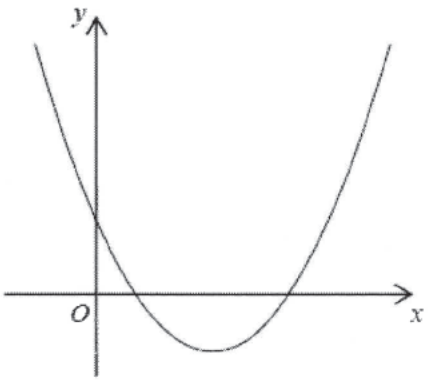
B.



C.

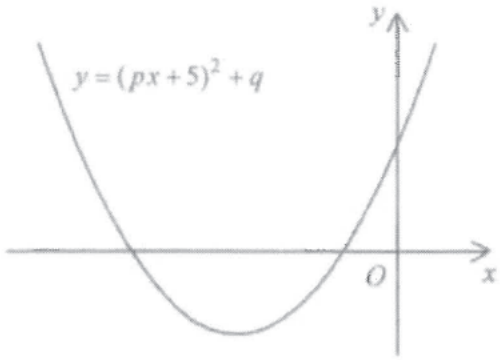


D.



[2016-DSE-MATHS 2-9]

39. The figure shows the graph of $y = (px + 5)^2 + q$, where p and q are constants. Which of the following is true?



A. $p < 0$ and $q < 0$
B. $p < 0$ and $q > 0$
C. $p > 0$ and $q < 0$
D. $p > 0$ and $q > 0$

[2017-DSE-MATHS 2-9]

40. Which of the following statements about the graph of $y = 16 - (x - 6)^2$ is true?

A. The graph cuts the x-axis.
B. The graph opens upwards.
C. The y-intercept of the graph is 16.
D. The graph passes through the origin.

[2018-DSE-MATHS 2-5]

41. Which of the following statements about the graph of $y = (3 - x)(x + 2) + 6$ is / are true?

I. The graph opens downwards.
II. The graph passes through the point (1,10).
III. The x-intercepts of the graph are -2 and 3.

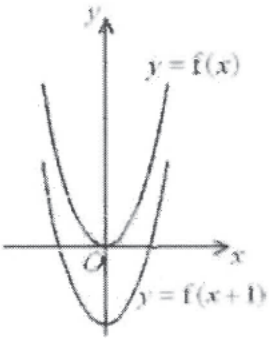
A. I only
B. II only
C. I and III only
D. II and III only

[2019-DSE-MATHS 2-10]

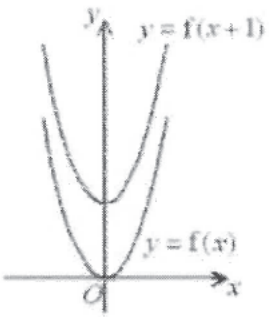
Transformations of Graphs

1. Which of the following may represent the graph of $y = f(x)$ and the graph of $y = f(x + 1)$ on the same rectangular coordinate system?

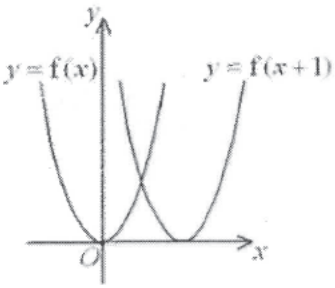
A.



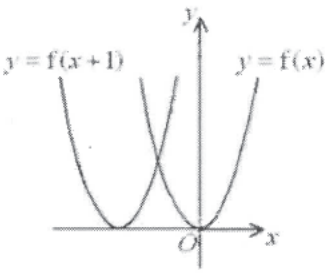
B.



C.



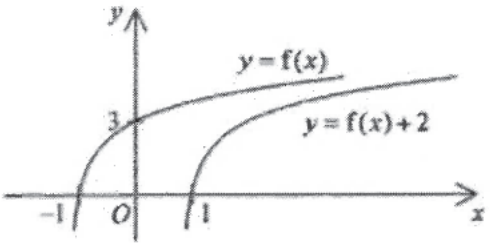
D.



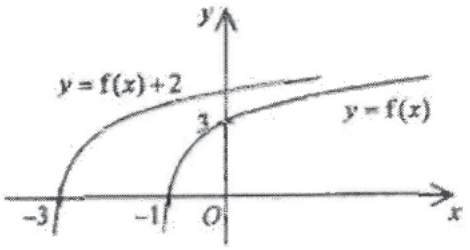
[2007-CE-MATHS 2-38]

2. Which of the following may represent the graph of $y = f(x)$ and the graph of $y = f(x) + 2$ on the same rectangular coordinate system?

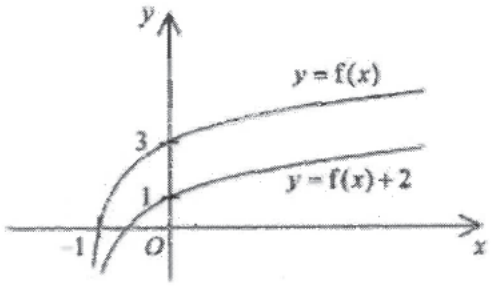
A.



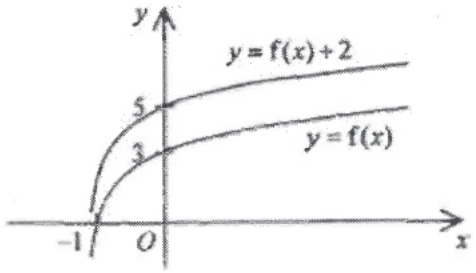
B.



C.

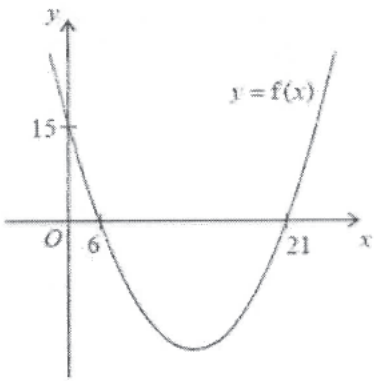


D.



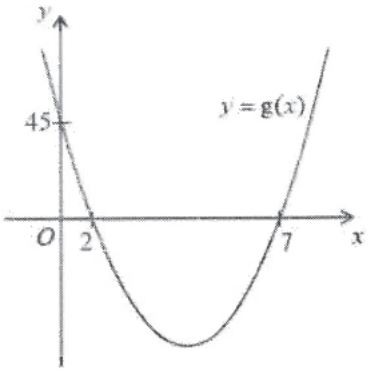
[2008-CE-MATHS 2-37]

3.

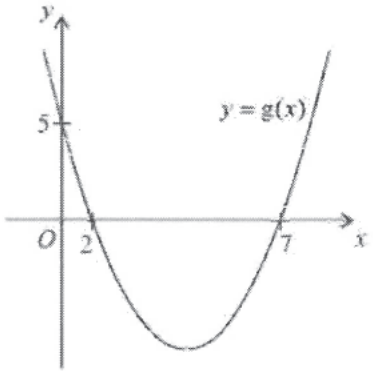


The figure above shows the graph of $y = f(x)$. If $f(x) = 3g(x)$, which of the following may represent the graph of $y = g(x)$?

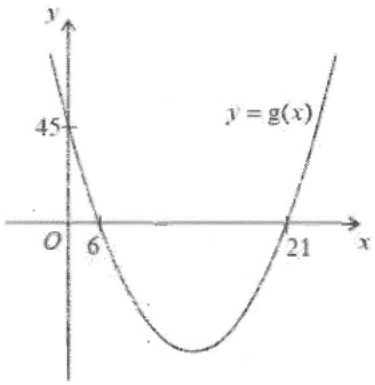
A.



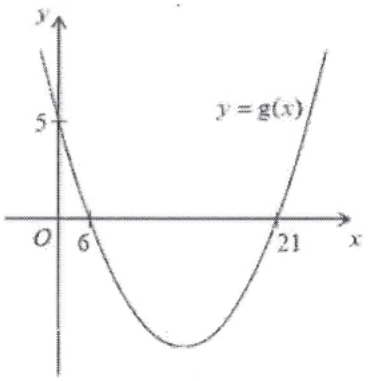
B.



C.

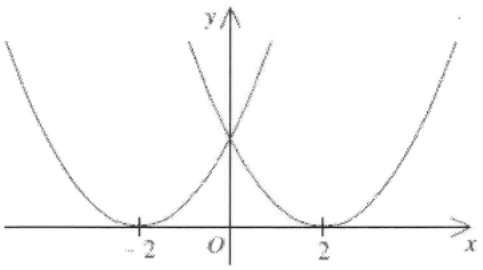


D.



[2009-CE-MATHS 2-37]

4.



Let f(x) be a quadratic function. The figure shows the graph of y = f(x) and

A. the graph of y = f(x − 2).

B. the graph of y = f(x + 2).

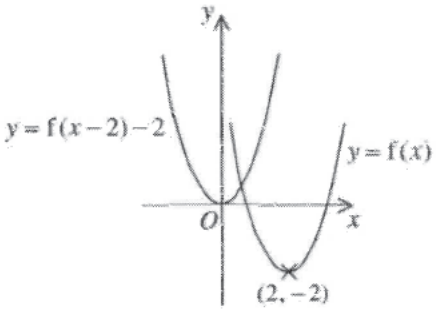
C. the graph of y = f(−x).

D. the graph of y = −f(x).

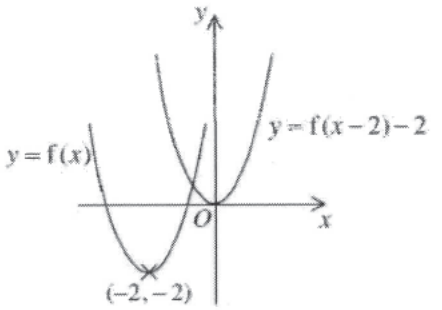
[2010-CE-MATHS 2-37]

5. Which of the following may represent the graph of y = f(x) and the graph of y = f(x − 2) − 2 on the same rectangular coordinate system?

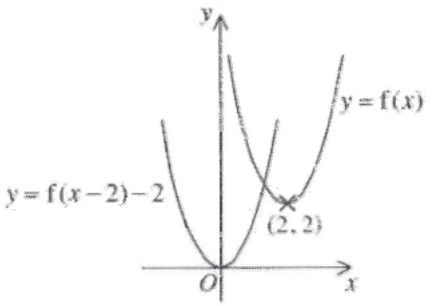
A.



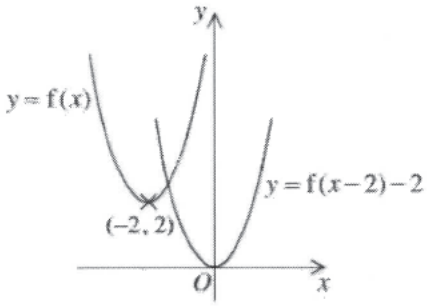
B.



C.



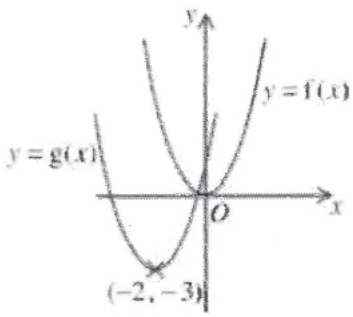
D.



[2011-CE-MATHS 2-37]

HKDSE Problems

6.

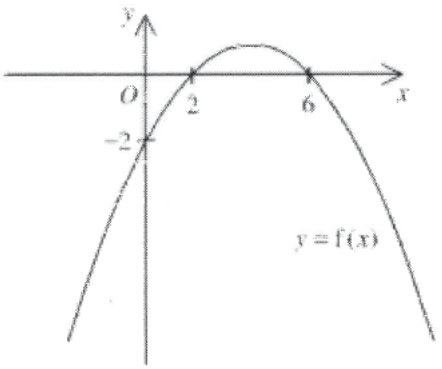


If the figure shows the graph of $y = f(x)$ and the graph of $y = g(x)$ on the same rectangular coordinate system, then

A. $g(x) = f(x-2) - 3$.
B. $g(x) = f(x-2) + 3$.
C. $g(x) = f(x+2) - 3$.
D. $g(x) = f(x+2) + 3$.

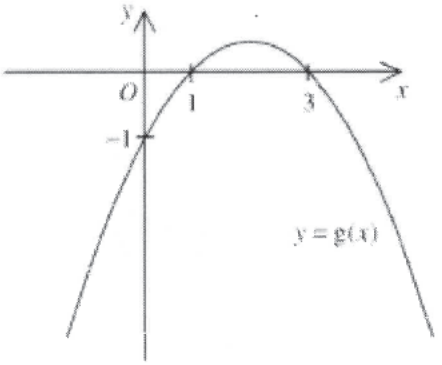
[SP-DSE-MATHS 2-37]

7.

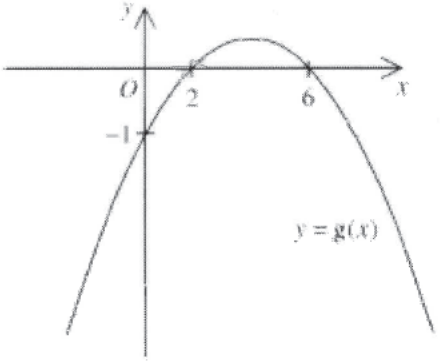


The figure above shows the graph of $y = f(x)$. If $2f(x) = g(x)$, which of the following may represent the graph of $y = g(x)$?

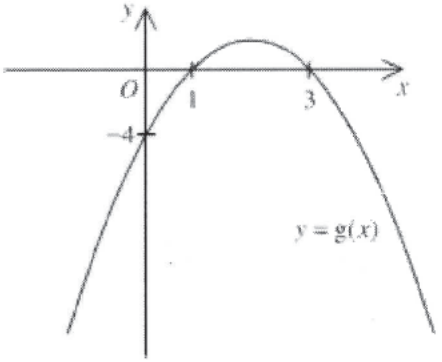
A.



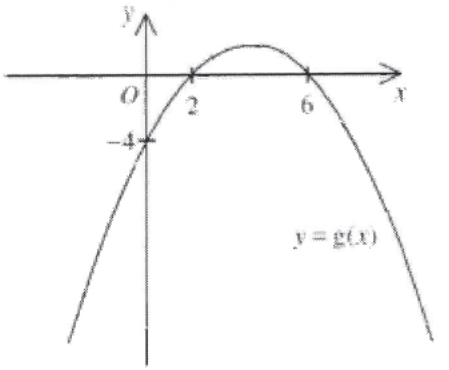
B.



C.



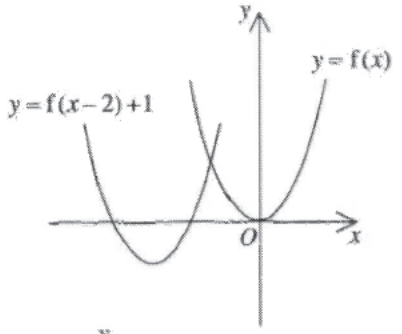
D.



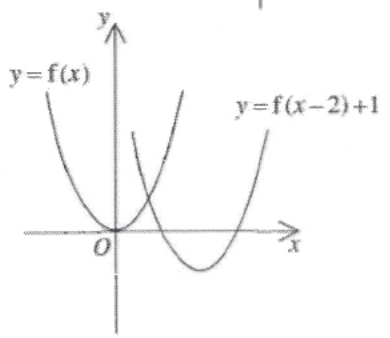
[PP-DSE-MATHS 2-31]

8. Which of the following may represent the graph of $y = f(x)$ and the graph of $y = f(x-2) + 1$ on the same rectangular coordinate system?

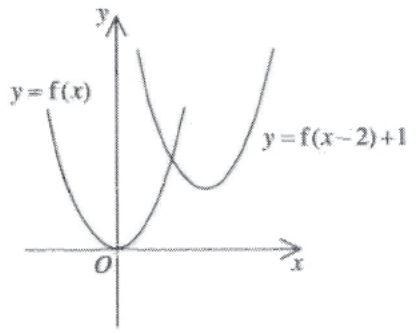
A.



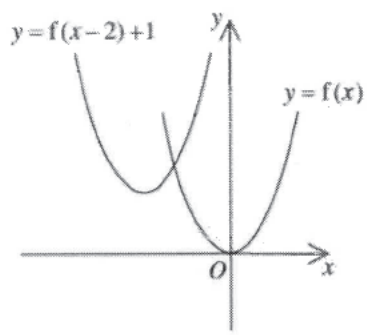
B.



C.



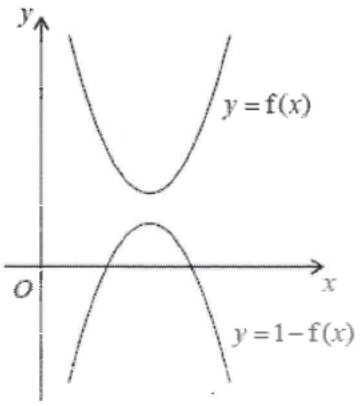
D.



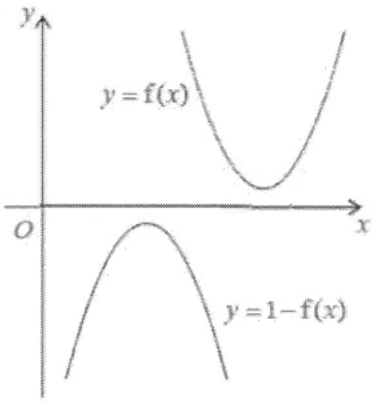
[2012-DSE-MATHS 2-38]

9. Which of the following may represent the graph of $y = f(x)$ and the graph of $y = 1 - f(x)$ on the same rectangular coordinate system?

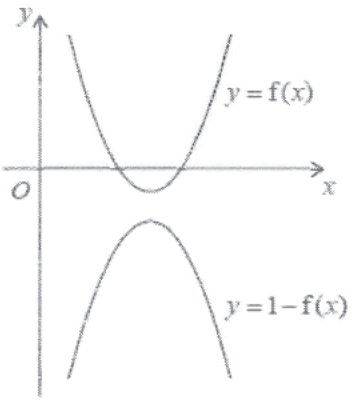
A.



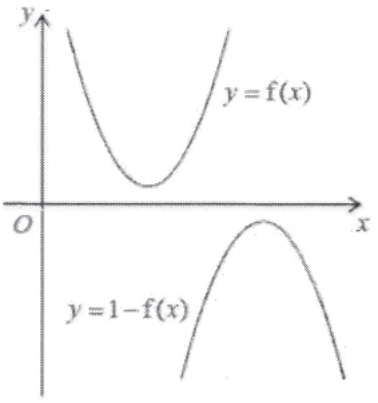
B.



C.

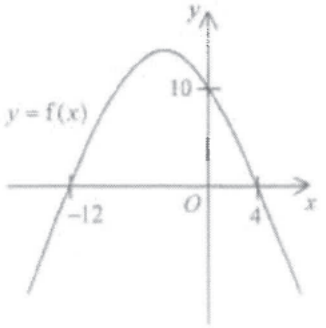


D.



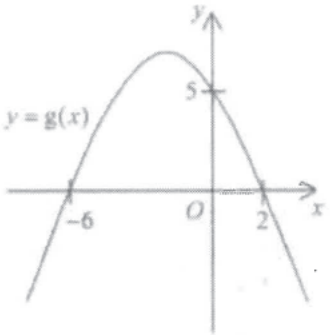
[2014-DSE-MATHS 2-38]

10.

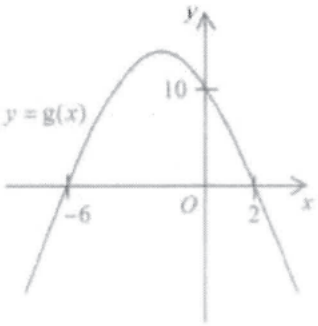


The figure above shows the graph of $y = f(x)$. If $g(x) = f(\frac{x}{2})$, which of the following may represent the graph of $y = g(x)$?

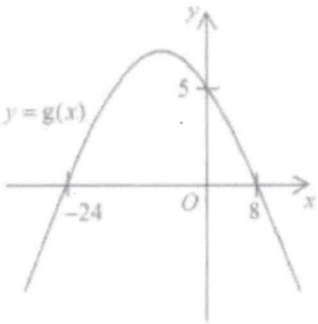
A.



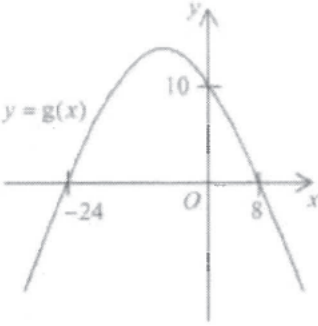
B.



C.

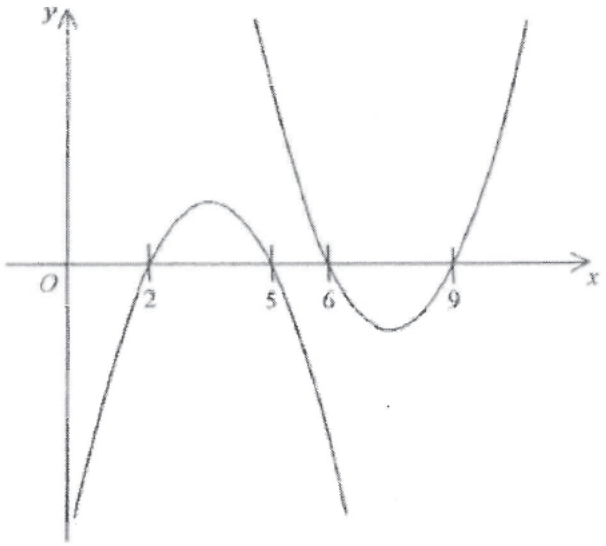


D.



[2017-DSE-MATHS 2-31]

11. Let $f(x)$ be a quadratic function. The figure below may represent the graph of $y = f(x)$ and

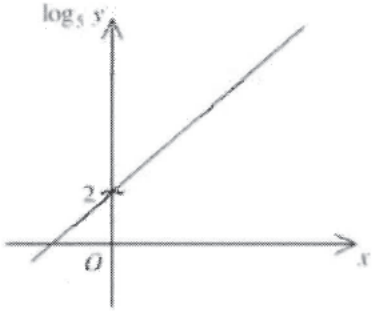


A. the graph of $y = -3f(x)$
B. the graph of $y = f(-3x)$
C. the graph of $y = -f(x + 4)$
D. the graph of $y = f(-x + 11)$

[2018-DSE-MATHS 2-31]

HKDSE Problems

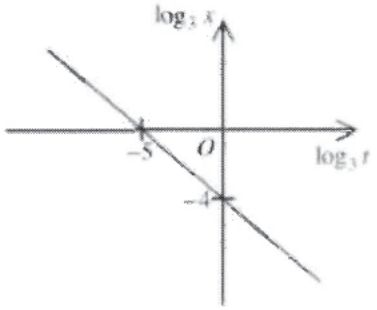
1. The graph in the figure shows the linear relation between x and $\log_5 y$. If $y = ab^x$, then $a =$



A. 1.
B. 2.
C. 5.
D. 25.

[SP-DSE-MATHS 2-32]

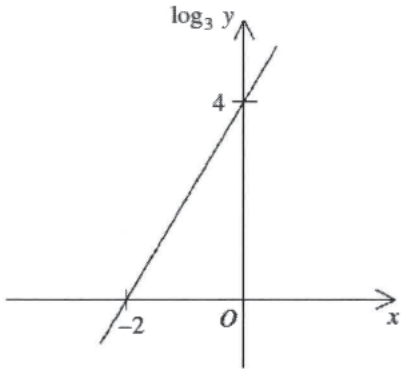
2. The graph in the figure shows the linear relation between $\log_3 t$ and $\log_3 x$. If $x = kt^a$, then $k =$



A. $\frac{1}{81}$.
B. 81.
C. $\frac{-4}{5}$.
D. $\frac{-5}{4}$.

[PP-DSE-MATHS 2-37]

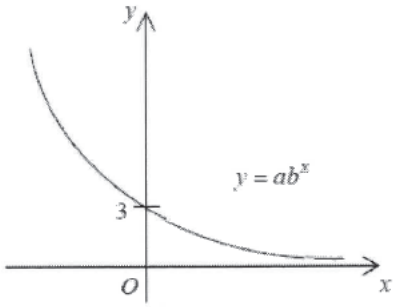
3. The graph in the figure shows the linear relation between x and $\log_3 y$. If $y = mn^x$, then $n =$



A. $\frac{1}{81}$.
B. $\frac{1}{9}$.
C. 9.
D. 81.

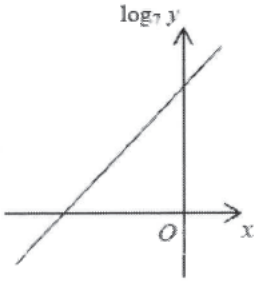
[2012-DSE-MATHS 2-32]

4.

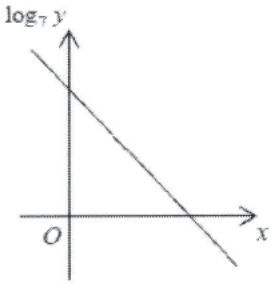


The figure above shows the graph of $y = ab^x$, where a and b are constants. Which of the following graphs may represent the relation between x and $\log_7 y$?

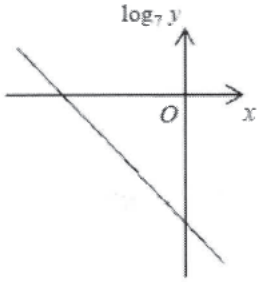
A.



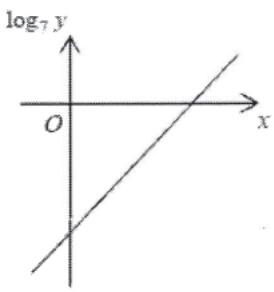
B.



C.

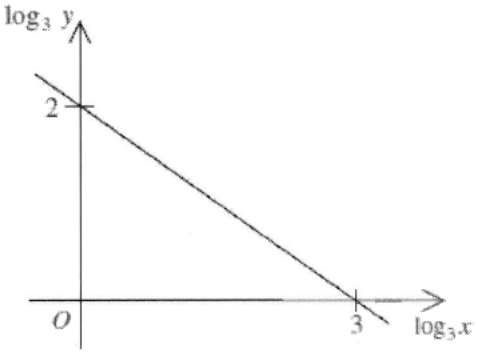


D.



[2013-DSE-MATHS 2-32]

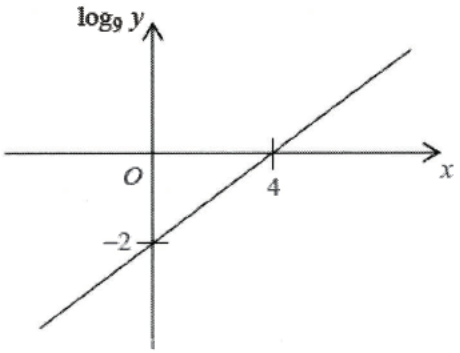
5. The graph in the figure shows the linear relation between $\log_3 x$ and $\log_3 y$. Which of the following must be true?



A. $x^2y^3 = 729$
B. $x^3y^2 = 729$
C. $x^2 + y^3 = 729$
D. $x^3 + y^2 = 729$

[2015-DSE-MATHS 2-32]

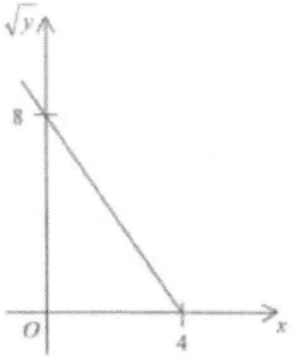
6. The graph in the figure shows the linear relation between x and $\log_9 y$. If $y = ab^x$, then $b =$



A. -2.
B. $\frac{1}{81}$.
C. $\frac{1}{2}$.
D. 3.

[2016-DSE-MATHS 2-32]

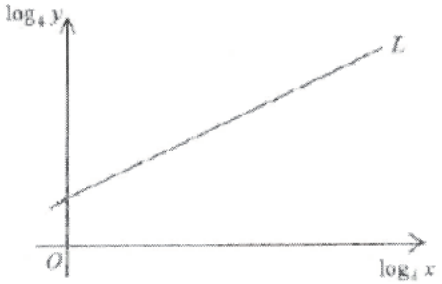
7. The graph in the figure shows the linear relation between x and $\sqrt{y}$. Which of the following must be true?



A. $y = x^2 - 4x + 8$
B. $y = x^2 + 4x + 8$
C. $y = 4x^2 - 32x + 64$
D. $y = 4x^2 + 32x + 64$

[2017-DSE-MATHS 2-33]

8. In the figure, the straight line L shows the relation between $\log_4 x$ and $\log_4 y$. It is given that L passes through the points (1,2) and (9,6). If $y = kx^a$, then $k =$



A. $\frac{1}{2}$
B. $\frac{3}{2}$
C. 2
D. 8

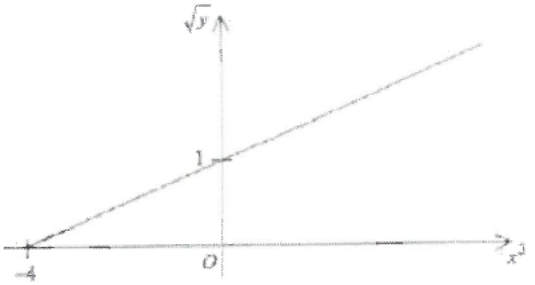
[2018-DSE-MATHS 2-33]

9. It is given that $\log_9 y$ is a linear function of $\log_3 x$. The intercepts on the vertical axis and on the horizontal axis of the graph of the linear function are 7 and 8 respectively. Which of the following must be true?

A. $x^4y^7 = 3^{56}$
B. $x^7y^4 = 3^{56}$
C. $x^7y^8 = 3^{56}$
D. $x^8y^7 = 3^{56}$

[2019-DSE-MATHS 2-31]

10. The graph in the figure shows the linear relation between x^3 and $\sqrt{y}$. If $x = 2$, $y =$



A. 3
B. 8
C. 9
D. 33

[2020-DSE-MATHS 2-34]