

Algebra II Practice Test

Objective: 1.1a

1. Which is equivalent to $49^{\frac{3}{2}}$?
 - A 21
 - B 98
 - C 294
 - D 343
2. Which expression is another way to write $\sqrt[3]{125x^4}$?
 - A $5x^{\frac{3}{4}}$
 - B $5x^{\frac{4}{3}}$
 - C $25x^{\frac{3}{4}}$
 - D $25x^{\frac{4}{3}}$
3. If x and y are real numbers, what is the simplified radical form of $(x^2y^5)^{\frac{1}{5}}$?
 - A $y\sqrt{x^2}$
 - B $y\sqrt{x^5}$
 - C $|y|\sqrt[5]{x^2}$
 - D $|y|\sqrt{x^5}$

Objective 1.1b

4. What is the simplified expression of $\sqrt{\frac{36x^8}{4x^6}}$?
 - A $3x$
 - B $9x$
 - C $3x^2$
 - D $9x^2$
5. What is the simplified form of $(2\sqrt{5}+3)(\sqrt{5}-1)$?
 - A $\sqrt{5}-3$
 - B $\sqrt{5}+7$
 - C $2\sqrt{5}-3$
 - D $2\sqrt{5}+7$

6. What is the sum of $\frac{1}{3\sqrt{25}}$ and $\frac{1}{2\sqrt[3]{27}}$?

- A $\frac{2}{21}$
- B $\frac{7}{30}$
- C $\frac{2}{33}$
- D $\frac{11}{90}$

7. The area of a square is $2\sqrt{2}+3$. What is the length of a side of the square?

- A $\sqrt{2}-1$
- B $\sqrt{2}+1$
- C $2\sqrt{2}-1$
- D $2\sqrt{2}+1$

Objective 1.2a

8. Which expression represents the quotient? $\frac{8x^6z^4 + 4x^4z^2}{4x^2z}$

- A $2x^4z^3 + x^2z$
- B $2x^3z^4 + x^2z^2$
- C $4x^4z^3 + 3x^2z$
- D $4x^3z^4 + 3x^2z^2$

9. Which expression represents the quotient? $\frac{4x^2y}{8xy^2} \div \frac{12xy^2}{8x^6y^3}$

- A $\frac{x^5}{3}$
- B $\frac{3}{x^5}$
- C $\frac{x^6}{3}$
- D $\frac{3}{x^6}$

10. Which expression represents the quotient? $(y^2 - 4y - 32) \div (y + 4)$

- A $y-8$
- B $y+8$
- C $y-4$
- D $y+4$

11. A rectangular prism has a volume of $8x^3 + 14x^2 + x - 2$ and a height of $2x + 1$. Which expression represents the area of the base of the prism?
- A $4x^2 + 5x - 2$
 - B $4x^2 + 5x + 2$
 - C $4x^2 + 9x + 4$
 - D $4x^2 + 9x + 5$

objective 1.2b

12. What is the completely simplified equivalent of $\frac{x^2 + x - 12}{x^2 - 6x + 9}$?

- A $\frac{x-3}{x+4}$
- B $\frac{x+4}{x-3}$
- C $2x^2 + 5x - 3$
- D $2x^2 + 7x + 21$

13. Which expression represents the result of this subtraction $\frac{3x-1}{x+2} - \frac{x-2}{x-1}$?

- A $\frac{2x+1}{3}$
- B $\frac{2x+1}{x^2+x-2}$
- C $\frac{3x^2-4x+5}{3}$
- D $\frac{2x^2-4x+5}{x^2+x-2}$

14. What is the simplified equivalent of $2 - x - \frac{1}{3-x}$?

- A $\frac{1}{3-2x}$
- B $\frac{x^2-x+3}{3-x}$
- C $\frac{x^2-5x+5}{3-x}$
- D $\frac{x^2-5x+7}{3-x}$

objective 1.3b

15. Which expression is equivalent to $(4i)^3$?

- A $-12i$
- B $12i$
- C $-64i$
- D $64i$

16. A circuit has a current of $(8 + 7i)$ amps, and another circuit has a current of $(5 - 3i)$ amps. What is the difference between the currents of the two circuits?

- A $(3 - 4i)$ amps
- B $(3 + 4i)$ amps
- C $(3 - 10i)$ amps
- D $(3 + 10i)$ amps

17. Which expression is equivalent to $\sqrt{-6}(\sqrt{-4} - \sqrt{3})$?

- A $2\sqrt{6} + 3\sqrt{2}$
- B $-24 - 6i\sqrt{3}$
- C $2\sqrt{6} - 3i\sqrt{2}$
- D $-2\sqrt{6} - 3i\sqrt{2}$

18. What is the product of $(2 + 3i)$ and $(5 - 4i)$?

- A $-2 - 23i$
- B $-2 + 7i$
- C $22 - 23i$
- D $22 + 7i$

19. What is the completely simplified equivalent of $\frac{2}{5+i}$?

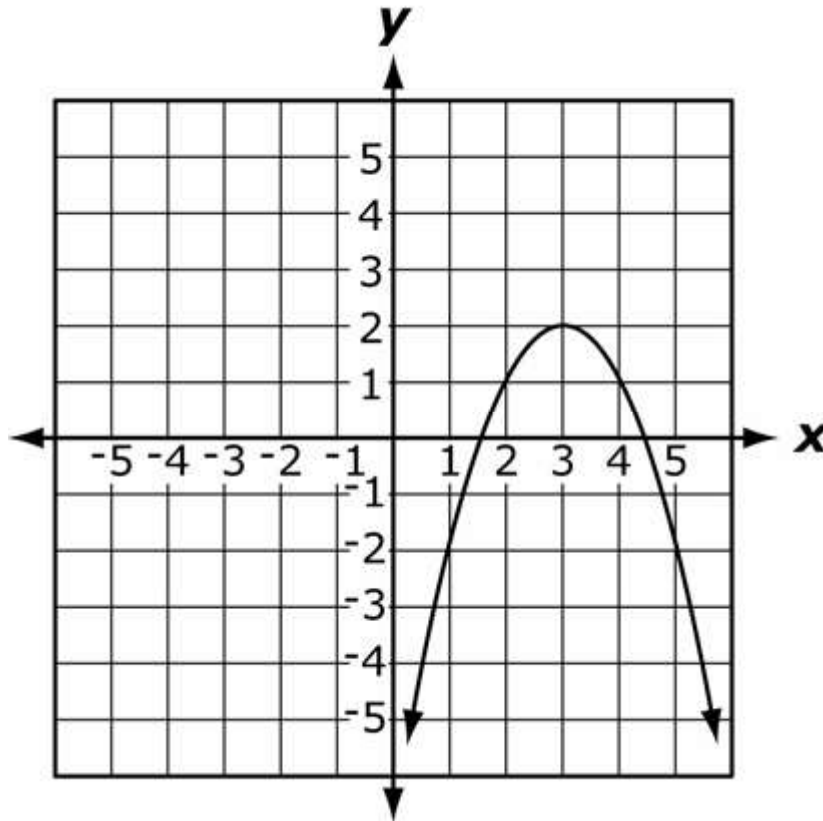
- A $\frac{5-i}{12}$
- B $\frac{5+i}{12}$
- C $\frac{5-i}{13}$
- D $\frac{5+i}{13}$

objective 2.1a

20. What is the parent graph of the following function and what transformations have taken place on it: $y = (x-3)^2$?

- A The parent graph is $y = x^2$, which is shifted 3 units up.
- B The parent graph is $y = x^2$, which is shifted 3 units down.
- C The parent graph is $y = x^2$, which is shifted 3 units to the left.
- D The parent graph is $y = x^2$, which is shifted 3 units to the right.

21. What is the parent function of this graph?



- A $f(x) = x^2$
- B $f(x) = x^4$
- C $f(x) = -x^2$
- D $f(x) = -x^4$

objective 2.1b

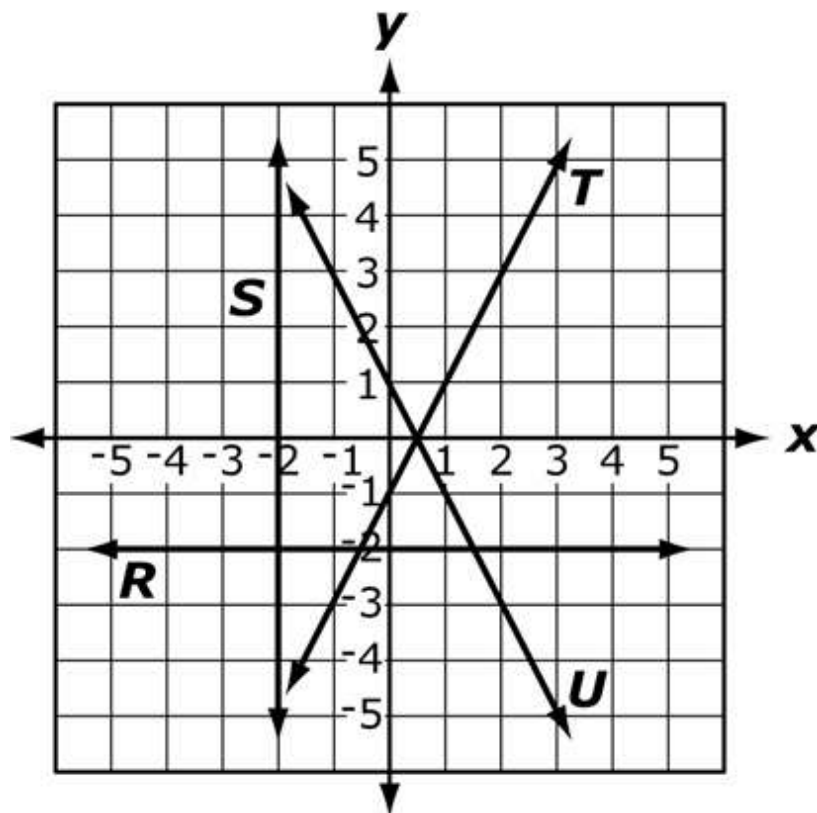
22. If $f(x) = 3x^2 - 2$ and $g(x) = 4x + 2$, what is the value of $(f + g)(-1)$?

- A -7
- B -1
- C 1
- D 7

23. If $f(x) = x^2 - 1$ and $g(x) = x - 1$, what is the value of $\left(\frac{f}{g}\right)(x)$?

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

24.



If $f(x) = x - \frac{1}{2}$ and $g(x) = -2$, which graph corresponds to the function of $(fg)(x)$?

- A line R
- B line S
- C line T
- D line U

Objective 2.1c

25. If $f(x) = 2x + 7$ and $g(x) = 3x^2 - 1$, what expression represents $(f(g(x)))$?

- A $6x^2 + 5$
- B $6x^2 + 12$
- C $3x^2 - 2x - 8$
- D $3x^2 + 2x + 6$

26. If $(f \circ g)(x) = 2x - 1$, how might $f(x)$ and $g(x)$ be defined?

- A $f(x) = (x - 1)$ and $g(x) = (2x - 1)$
- B $f(x) = (x - 1)$ and $g(x) = (2x + 1)$
- C $f(x) = (2x - 1)$ and $g(x) = (x - 1)$
- D $f(x) = (2x + 1)$ and $g(x) = (x - 1)$

Objective 2.1d

27. Which statement is true for the function $f(x) = \frac{1}{x+4}$?

- A 4 is not in the range of the function.
- B 4 is not in the domain of the function.
- C -4 is not in the range of the function.
- D -4 is not in the domain of the function.

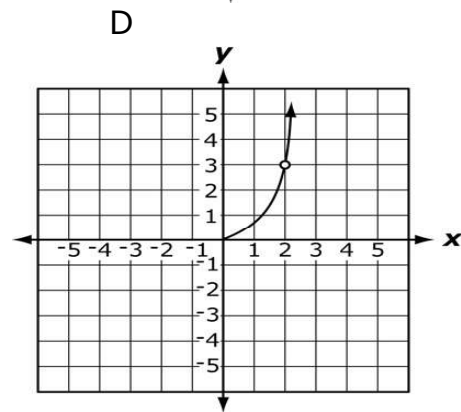
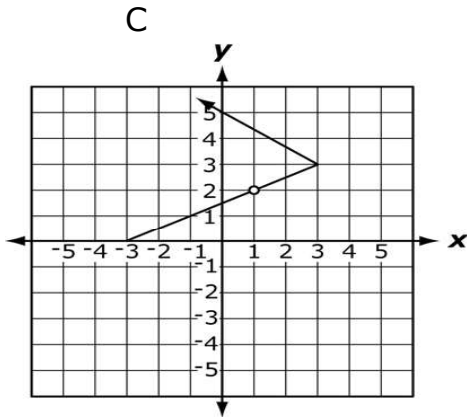
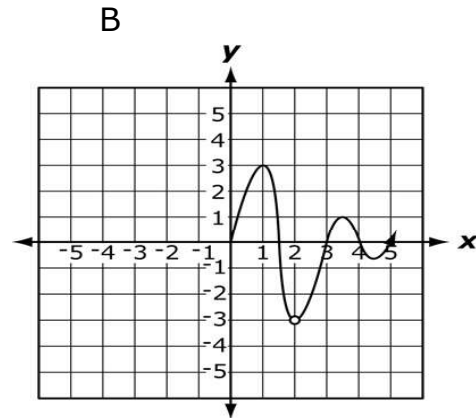
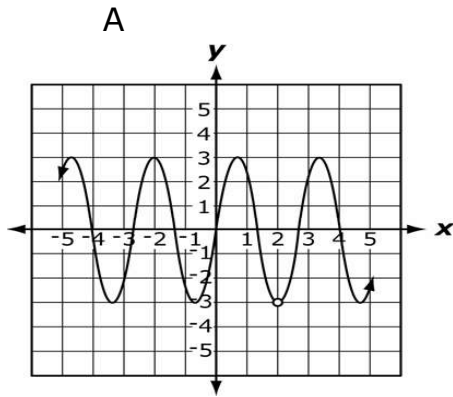
28. What is the domain of the function $f(x) = \frac{x+5}{x^2+2x-8}$?

- A $\{x : x \neq 0\}$
- B $\{x : x \neq -5\}$
- C $\{x : x \neq -2, 4\}$
- D $\{x : x \neq 2, -4\}$

29. Which intervals correctly define the domain of $f(x) = \frac{1}{x+4} - 2$?

- A $(-\infty, 4)$ and $(4, \infty)$
- B $(-\infty, -4)$ and $(4, \infty)$
- C $(-\infty, -4)$ and $(-4, \infty)$
- D $(-\infty, -4)$ and $(-2, \infty)$

30. Domain: $\{x|x \geq 0, x \neq 2\}$ Range: $\{y|-3 < y \leq 3\}$ Which graph corresponds to the given constraints?



31. Which function has the fewest domain restrictions for real numbers?

A $f(x) = \frac{1}{x-1}$

B $f(x) = \frac{1}{x+1}$

C $f(x) = \frac{1}{x^2-1}$

D $f(x) = \frac{1}{x^2+1}$

Objective 2.1e

32. What is the inverse of $f(x) = x+1$?

A $f^{-1}(x) = -x-1$

B $f^{-1}(x) = x-1$

C $f^{-1}(x) = \frac{-1}{1-x}$

D $f^{-1}(x) = \frac{1}{1+x}$

33. What is the inverse of the function $f(x) = (x+4)^2$?

A $f^{-1}(x) = \sqrt{x} - 4$

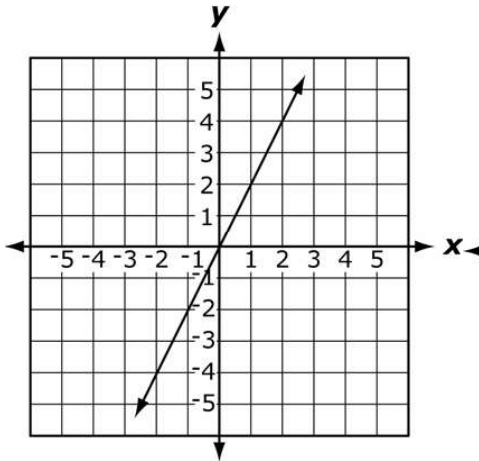
B $f^{-1}(x) = \frac{1}{(x+4)^2}$

C $f^{-1}(x) = \pm\sqrt{x} - 4$

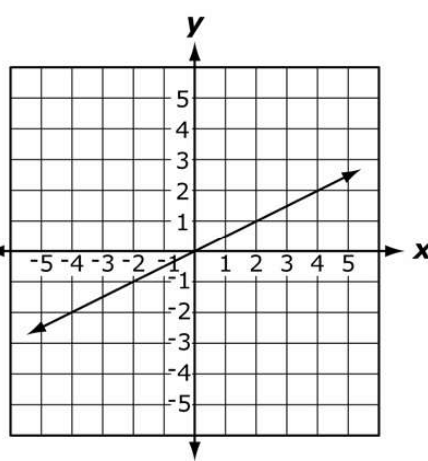
D $f^{-1}(x) = (x-4)^2$

34. Which graph represents the inverse of $f(x) = 2x$?

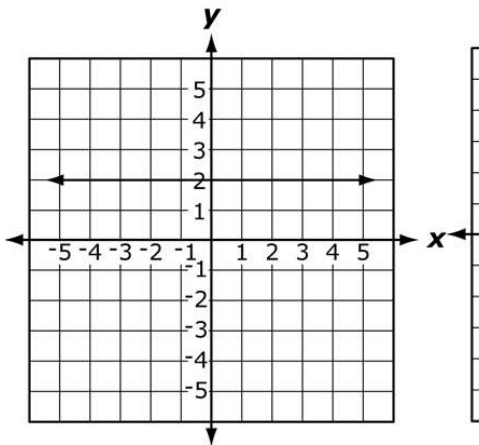
A



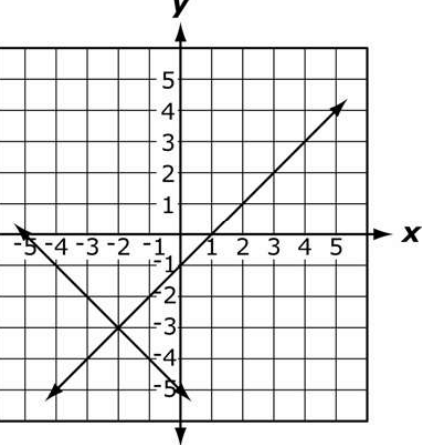
B



C



D



35. Which statement about graphs and their inverse is true?

A They are symmetric about $y = x$.

B They are symmetric about the origin.

C They are symmetric about the x-axis.

D They are symmetric about the y-axis.

Objective 2.2a

36. Profits, P , are equal to sales, S , minus expenses, E . If expenses are equal to travel, T , plus materials, M , which system of equations models this situation?

A
$$\begin{aligned} P &= S - E \\ E &= T + M \end{aligned}$$

B
$$\begin{aligned} P &= S + E \\ E &= T + M \end{aligned}$$

C
$$\begin{aligned} P &= S - E \\ E &= T - M \end{aligned}$$

D
$$\begin{aligned} P &= S + E \\ E &= T - M \end{aligned}$$

37. Tyrone wants to spend at most \$10,000 on two televisions, R and S . Each television must cost at least \$3,000, and television R must cost at least twice as much as television S . Which system of inequalities models the amount of money spent on each television?

A
$$\begin{aligned} R + S &\geq 10,000 \\ R &\geq 2S \\ R &\geq 3,000 \\ S &\geq 3,000 \end{aligned}$$

B
$$\begin{aligned} R + S &\leq 10,000 \\ S &\geq 2R \\ R &\geq 3,000 \\ S &\geq 3,000 \end{aligned}$$

C
$$\begin{aligned} R + S &\leq 10,000 \\ R &\geq 2S \\ R &\geq 3,000 \\ S &\geq 3,000 \end{aligned}$$

D
$$\begin{aligned} R + S &\geq 10,000 \\ S &\geq 2R \\ R &\geq 3,000 \\ S &\geq 3,000 \end{aligned}$$

38. Meredith invests \$50,000 in her new business. It costs the company \$10 to produce each unit, which is sold for \$15. Let C represent the cost and R represent the revenue for x units. Which statement is true about the graphs of the equations $C = 50,000 + 10x$ and $R = 15x$?

A Both slopes are positive.

B Both slopes are negative.

C One slope is positive, and the other is zero.

D one slope is negative, and the other is positive.

Objective 2.2b

39. Which quadrants contain the solutions to this system of inequalities?

$$\begin{cases} y - 2x \leq -3 \\ 3y + x \geq -4 \end{cases}$$

A quadrants I and IV

B quadrants II and III

C quadrants III and IV

D quadrants II, III, and IV

40. What is the solution to this system of equations? $\begin{cases} 3x - y + 5 = 0 \\ 2x + 3y - 4 = 0 \end{cases}$

- A $x = -1, y = -2$
- B $x = -1, y = 2$
- C $x = 2, y = -1$
- D $x = 2, y = 1$

41. The corners of a triangle are $(2,1)$, $(4,4)$, and $(6,2)$. Which system of inequalities describes the interior of the triangle?

- A $\begin{cases} 4y > x + 2 \\ 3y < 2x - 1 \\ y < 8 - x \end{cases}$
- B $\begin{cases} 4y > x + 2 \\ 2y < 3x - 4 \\ y < 8 - x \end{cases}$
- C $\begin{cases} 2y > x \\ 2y < 3x - 4 \\ y < 8 - x \end{cases}$
- D $\begin{cases} 2y > x \\ 3y < 2x - 1 \\ y < 8 - x \end{cases}$

Objective 2.2c

42. What is the solution set of this system of equations?

$$\begin{cases} x^2 + y - 1 = 0 \\ x - y + 1 = 0 \end{cases}$$

- A $\{(-1, -1), (-1, 0)\}$
- B $\{(-1, 0), (-1, 1)\}$
- C $\{(-1, 0), (0, 1)\}$
- D $\{(1, 0), (1, 1)\}$

43. What is the solution set of this system of equations?

$$\begin{cases} y - x = 3 \\ x^2 - 7y + 31 = 0 \end{cases}$$

- A $\{(2, 5), (5, 2)\}$
- B $\{(2, 5), (5, 8)\}$
- C $\{(5, 8), (8, 5)\}$
- D $\{(8, 5), (8, 8)\}$

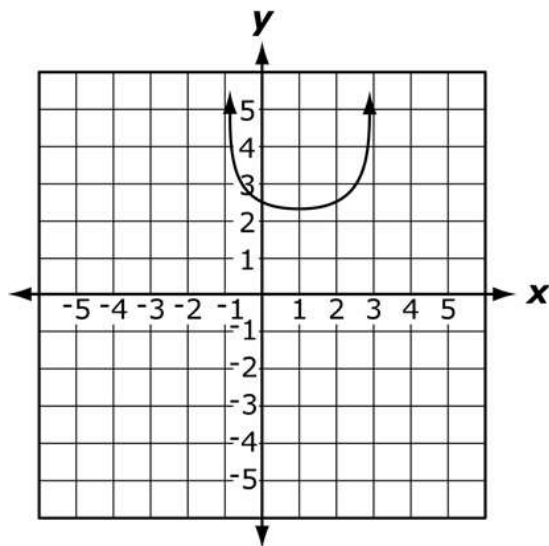
44. What is the solution set of this system of equations?

$$\begin{cases} x^2 - y = -3 \\ 2x^2 - y = -2 \end{cases}$$

- A $\{(-1, -4), (-1, 4)\}$
- B $\{(-1, -4), (1, 4)\}$
- C $\{(-1, 4), (1, -4)\}$
- D $\{(-1, 4), (1, 4)\}$

Objective 2.3a

45. How many real roots does the function given by the graph have?



- A 0 real roots
- B 1 real root
- C 2 real roots
- D 4 real roots

46. What number is added to both sides of the equation $x^2 - 8x + 3 = 0$ to solve it by completing the square?

- A -16
- B 16
- C -64
- D 64

47. What is the solution of $x^2 + 5x - 3 = 0$?

- A $\frac{-5 \pm \sqrt{13}}{2}$
- B $\frac{-5 \pm \sqrt{37}}{2}$
- C $\frac{5 \pm \sqrt{13}}{2}$
- D $\frac{5 \pm \sqrt{37}}{2}$

Objective 2.3b

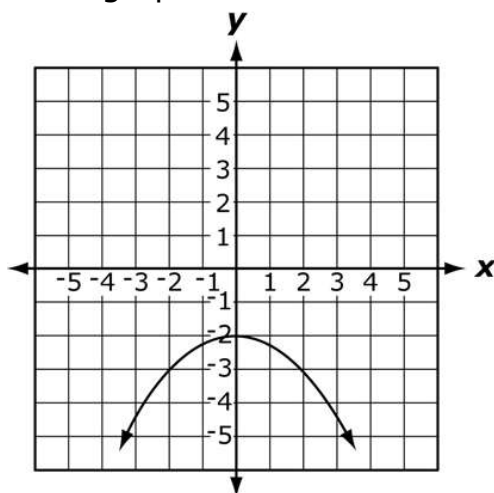
48. What is the y-intercept of $f(x) = 3x^2 - 2x + 1$?

- A (0, -1)
- B (0, 1)
- C (-1, 0)
- D (1, 0)

49. What are the coordinates at the minimum point of $f(x) = x^2 - 4x + 3$?

- A (-1, -2)
- B (-1, 2)
- C (2, -1)
- D (2, 1)

50. Which function represents this graph?



- A $f(x) = \frac{-1}{4}x^2 - 2$
- B $f(x) = \frac{1}{4}x^2 - 2$
- C $f(x) = -4x^2 - 2$
- D $f(x) = 4x^2 - 2$