ILLINOIS ALGEBRA 2 · UNIT 1 · 25 QUESTIONS

Functions and Graphs — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **If f(x) = 2x + 3, then f(4) is**

- A 9
- B 11
- C 10
- D 12

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2 **If g(x) = x² - 5x + 6, then g(3) is**

- A 3
- B -3
- C 6
- D 0

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3 **If f(x) = 3x - 7, then f(-2) is**

- **A** -13
- **B** 13
- **C** 1
- **D** -1

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4 **The domain of f(x) = $\sqrt{x - 5}$ is**

- **A** all real numbers
- **B** $x > 5$
- **C** $x \geq 5$
- **D** $x \leq 5$

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5 The domain of $f(x) = \frac{1}{x + 2}$ is

- **A** $x \neq -2$
- **B** all real numbers
- **C** $x \neq 2$
- **D** $x \geq -2$

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6 The range of $f(x) = x^2 - 4$ is

- **A** $y \leq -4$
- **B** $y > -4$
- **C** $y \geq -4$
- **D** $y \geq 4$

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7 **The point (-2, 5) lies on the graph of y = f(x). The image of this point on the graph of y = f(x - 3) + 2 is**

- A (1, 3)
- B (-5, 3)
- C (1, 7)
- D (-5, 7)

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8 **The vertex of $y = (x - 3)^2 + 5$ is**

- A (-3, -5)
- B (-3, 5)
- C (3, -5)
- D (3, 5)

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9 **The inverse of $f(x) = 3x + 4$ is**

- **A** $f^{-1}(x) = \frac{x + 4}{3}$
- **B** $f^{-1}(x) = \frac{x - 4}{3}$
- **C** $f^{-1}(x) = 3x - 4$
- **D** $f^{-1}(x) = \frac{x}{3} + 4$

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10 **Given $f(x) = 2x + 1$ and $g(x) = x^2$, the value of $(f \circ g)(3)$ is**

- **A** 10
- **B** 7
- **C** 37
- **D** 19

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11 Given f(x) = x + 3 and g(x) = 2x - 1, the value of (g ° f)(2) is

- A 9
- B 7
- C 5
- D 11

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12 Let f(x) = 2x for x < 0 and f(x) = x + 3 for x ≥ 0. The value of f(-2) + f(3) is

- A 1
- B -2
- C 2
- D 10

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13 The sum of the solutions of $|x - 4| = 3$ is

- A 6
- B 10
- C 8
- D 4

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14 The average rate of change of $f(x) = x^2$ on the interval $1 \leq x \leq 4$ is

- A 6
- B 5
- C 15
- D 4

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15 **Which statement about the relation {(1, 2), (2, 3), (1, 4)} is true?**

- **A** It is a function because it has three pairs
- **B** It is not a function because 2 has two outputs
- **C** It is a function because every output is different
- **D** It is not a function because 1 has two outputs

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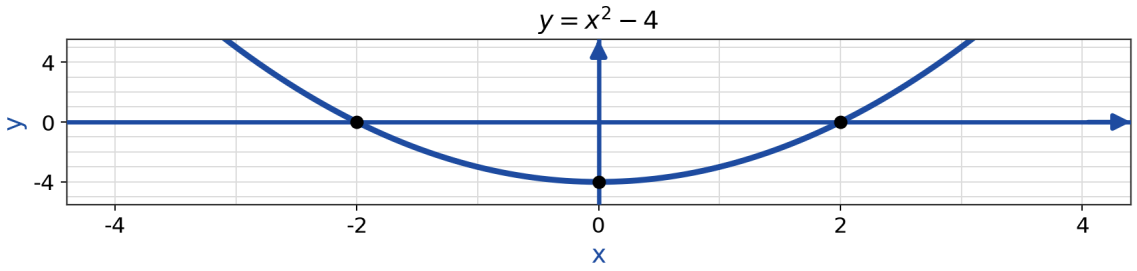
16 **The graph below shows y = x² - 4. The vertex of the graph is**



- **A** (2, 0)
- **B** (0, 4)
- **C** (0, -4)
- **D** (-4, 0)

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17 **The x-intercept of y = 2x - 6 is**

A -3

B 6

C 3

D -6

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18 **A linear function passes through (0, 3) and (2, 7). Its slope is**

A 3

B 2

C $\frac{1}{2}$

D 4

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19 **The function $f(x) = x^3$ is**

A neither even nor odd

B both even and odd

C even

D odd

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20 **The point (4, -2) lies on the graph of y = f(x). The corresponding point on the graph of the inverse, $y = f^{-1}(x)$, is**

A (2, -4)

B (4, 2)

C (-2, 4)

D (-4, 2)

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21 **Compared to the graph of y = f(x), the graph of y = -2f(x) has been**

- **A** reflected in the x-axis and vertically compressed by a factor of 2
- **B** reflected in the y-axis and vertically stretched by a factor of 2
- **C** vertically stretched by a factor of 2 only
- **D** reflected in the x-axis and vertically stretched by a factor of 2

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22 **If $f(x) = x^2 + 1$, then the positive solution of $f(x) = 10$ is**

ANSWER _____

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23 If $f(x) = \frac{x - 1}{x + 2}$, then f(3) is

- A $\frac{1}{2}$
- B $\frac{2}{5}$
- C 2
- D $\frac{4}{5}$

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24 The larger zero of $y = x^2 - 5x + 6$ is

- A 6
- B 1
- C 2
- D 3

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25 **The domain of y = f(x) is -2 ≤ x ≤ 6. The domain of y = f(x + 2) is**

- **A** 4 ≤ x ≤ 12
- **B** -4 ≤ x ≤ 4
- **C** 0 ≤ x ≤ 8
- **D** -2 ≤ x ≤ 6

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ANSWER KEY

1. B
2. D
3. A
4. C
5. A
6. C
7. C
8. D
9. B
10. D
11. A
12. C
13. C
14. B
15. D
16. C
17. C
18. B
19. D
20. C
21. D
22. 3
23. B
24. D
25. B

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