ILLINOIS ALGEBRA 2 · UNIT 2 · 25 QUESTIONS

Polynomials and Rational Functions — 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 **The degree of $(x^2 + 1)(x - 3)$ is**

- **A** 2
- **B** 3
- **C** 5
- **D** 6

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2 The leading coefficient of $-2x^4 + 5x^2 - x + 7$ is

- A -2
- B 4
- C 7
- D 5

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3 As $x \to -\infty$, the value of $-x^3 + 2x$ approaches

- A positive infinity
- B 2
- C negative infinity
- D 0

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4 **The sum of the zeros of $x^2 - 9$ is**

ANSWER _____

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5 **A factored form of $x^2 + 5x + 6$ is**

A $(x - 2)(x + 3)$

B $(x + 1)(x + 6)$

C $(x - 2)(x - 3)$

D $(x + 2)(x + 3)$

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6 **If $f(x) = x^3 - 2x^2 + 3x - 5$, then $f(2)$ is**

ANSWER _____

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7 If $f(x) = x^3 - 3x^2 + 2$, then $f(-1)$ is

- A 6
- B -2
- C 4
- D 0

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8 For $(x - 2)^2(x + 1)$, the multiplicity of the zero 2 is

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

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9 The vertical asymptote of $y = \frac{x + 1}{x - 3}$ is

- **A** $x = -3$
- **B** $y = 1$
- **C** $x = -1$
- **D** $x = 3$

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10 The horizontal asymptote of $y = \frac{2x^2 + x}{x^2 - 4}$ is

- **A** none
- **B** $y = 0$
- **C** $y = 1$
- **D** $y = 2$

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11 The graph of $y = \frac{x^2 - 4}{x - 2}$ has a hole at

- **A** $x = -2$
- **B** $x = 2$
- **C** $x = 4$
- **D** $y = 2$

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12 In simplest form, $\frac{x^2 - 9}{x - 3}$, for $x \neq 3$, is

- **A** $x + 9$
- **B** $x + 3$
- **C** $x - 9$
- **D** $x - 3$

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13 The sum $\frac{1}{x} + \frac{1}{x+1}$ is

A $\frac{1}{x(x+1)}$

B $\frac{2x}{x+1}$

C $\frac{2}{2x+1}$

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

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14 The solution of $\frac{x}{x-1} = 2$ is

A $x = -1$

B $x = 1$

C $x = -2$

D $x = 2$

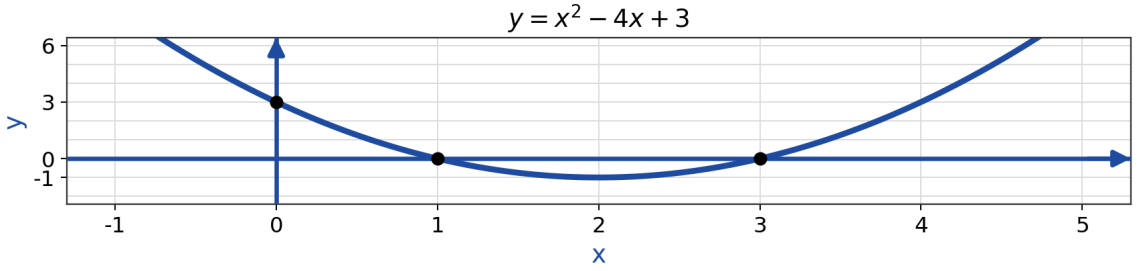
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15 **The quotient of $(x^2 + 3x + 2) \div (x + 1)$ is**

- **A** x + 1
- **B** x + 2
- **C** x + 3
- **D** x - 2

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16 **The graph below shows $y = x^2 - 4x + 3$. The smaller zero of the function is**



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

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17 **The zeros of $x^2 + 4$ are**

- A 4, -4
- B none
- C 2, -2
- D 2i, -2i

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18 **As $x \to \infty$ and as $x \to -\infty$, the graph of $y = 3x^4 - x^2$**

- A rises on both ends
- B rises on the left and falls on the right
- C falls on both ends
- D falls on the left and rises on the right

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19 **A factored form of $x^3 - 4x$ is**

- **A** $x(x - 2)(x + 2)$
- **B** $x(x - 4)$
- **C** $(x - 2)(x + 2)$
- **D** $x^2(x - 4)$

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20 **The domain of $y = \frac{x + 2}{x^2 - 16}$ excludes**

- **A** $x = -4$ only
- **B** $x = 4$ and $x = -4$
- **C** $x = -2$
- **D** $x = 4$ only

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21 The horizontal asymptote of $y = \frac{3x + 1}{x^2 + 2}$ is

- A y = 1
- B none
- C y = 3
- D y = 0

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22 The larger zero of $x^2 - 3x - 10 = 0$ is

- A 10
- B -2
- C 5
- D 2

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23 The sum of the zeros of $x^3 - 6x^2 + 11x - 6$ is

ANSWER

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24 The solution of $\frac{x + 3}{x} = 2$ is

A. $x = -3$

B. $x = 3$

C. $x = 6$

D. $x = 1$

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25 **A polynomial with leading coefficient 1 and zeros 0, -1, and 4 is**

- **A** $x^3 + 3x^2 - 4x$
- **B** $x^3 - 3x^2 + 4x$
- **C** $x^3 + 5x^2 + 4x$
- **D** $x^3 - 3x^2 - 4x$

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ANSWER KEY

1. B
2. A
3. A
4. 0
5. D
6. 1
7. B
8. A
9. D
10. D
11. B
12. B
13. D
14. D
15. B
16. A
17. D
18. A
19. A
20. B
21. D
22. C
23. 6
24. B
25. D

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