NEW HAMPSHIRE 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 **For $y = x^2 - 4x + 3$, 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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