SOUTH DAKOTA 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 $y = x + 1/x - 3$ is**

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

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10 **The horizontal asymptote of $y = 2x^2 + x/x^2 - 4$ is**

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

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11 **The graph of $y = x^2 - 4/x - 2$ has a hole at**

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

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12 **In simplest form, $x^2 - 9/x - 3$, for $x \neq 3$, is**

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

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13 **The sum 1/x + 1/x + 1 is**

A 1

B 2x/x + 1

C 2/2x + 1

D 2x + 1/x(x + 1)

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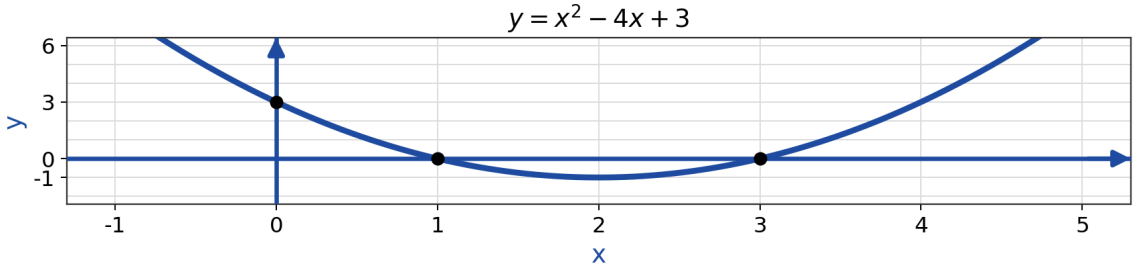
16 **The graph below shows $y = x^2 - 4x + 3$. The smaller zero of the function is**



- **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 $y = x + 2/x^2 - 16$ 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 $y = 3x + 1/x^2 + 2$ 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 $x + 3/x = 2$ 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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