ALBERTA MATH 20-1 · UNIT 3 · 25 QUESTIONS

Quadratics — 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 vertex of the graph of $y = 3(x - 4)^2 + 2$ is**

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

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2 **The graph shown is a parabola. Its y -intercept is**

- A -6
- B 6
- C 5
- D 11

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3 **The quadratic equation with roots 3 and -2 is**

- **A** $x^2 - x - 6 = 0$
- **B** $x^2 + x - 6 = 0$
- **C** $x^2 - 5x + 6 = 0$
- **D** $x^2 + 5x + 6 = 0$

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4 **The larger root of the equation $x^2 - 7x + 12 = 0$ is**

ANSWER _____

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5 **Compared to the graph of $y = x^2$, the graph of $y = (x + 2)^2 - 7$ is translated**

- **A** 2 units right and 7 units down
- **B** 2 units left and 7 units up
- **C** 2 units right and 7 units up
- **D** 2 units left and 7 units down

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6 **The solutions to the equation $x^2 - 9 = 0$ are**

- **A** $x = \pm 3$
- **B** $x = 3$
- **C** $x = \pm 9$
- **D** $x = -3$

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7 The number of distinct real roots of the equation $2x^2 + 4x + 5 = 0$ is

- **A** 2
- **B** 1
- **C** 0
- **D** Infinitely many

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8 The x-coordinate of the vertex of the graph of $f(x) = 2x^2 - 12x + 7$ is

ANSWER _____

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9 When completing the square on the expression $x^2 + 6x$, the constant that must be added is

- A 36
- B 9
- C 3
- D 6

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10 The graph shown is a parabola. Its maximum value is

- A 1
- B 2
- C 6
- D 5

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11 **The larger root of the equation $2x^2 - 3x - 2 = 0$ is**

ANSWER _____

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12 **Expressed in vertex form, $y = x^2 - 8x + 5$ is**

A $y = (x - 4)^2 + 21$

B $y = (x - 4)^2 - 11$

C $y = (x + 4)^2 - 11$

D $y = (x - 4)^2 - 21$

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13 **The graph shown is a parabola. Its domain and range are**

A Domain: all real numbers Range: $y \leq 8$

B Domain: all real numbers Range: $y \geq 8$

C Domain: $x \leq 1$ Range: $y \leq 8$

D Domain: all real numbers Range: all real numbers

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14 **The sum of the roots of the equation $3x^2 + 6x - 9 = 0$ is**

ANSWER _____

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15 The height, in metres, of a ball t seconds after it is thrown is given by $h(t) = -5t^2 + 20t + 15$. The maximum height reached by the ball is

- A 15 m
- B 20 m
- C 35 m
- D 40 m

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16 One factor of $2x^2 + 7x + 3$ is

- A $(x + 2)$
- B $(2x + 3)$
- C $(x + 1)$
- D $(2x + 1)$

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17 The graph shown is a parabola with its vertex marked V. The vertex is

- **A** (-1, -9)
- **B** (1, -9)
- **C** (-1, 9)
- **D** (-2, -8)

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18 The product of the roots of the equation $x^2 - 4x - 21 = 0$ is

ANSWER _____

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19 **A farmer uses 60 m of fencing to enclose a rectangular pen against a straight wall, so only three sides need fencing. The maximum area of the pen, in m², is**

- **A** 400
- **B** 450
- **C** 600
- **D** 900

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20 **A parabola has vertex (-2, 3) and passes through the point (0, 11). Its equation is**

- **A** $y = (x + 2)^2 + 3$
- **B** $y = -2(x + 2)^2 + 3$
- **C** $y = 2(x + 2)^2 + 3$
- **D** $y = 2(x - 2)^2 + 3$

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21 The equation $3x^2 + kx + 12 = 0$ has exactly one real root. The positive value of k is

ANSWER

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22 The exact solutions to the equation $x^2 - 4x + 1 = 0$ are

A $x = 2 \pm \sqrt{5}$

B $x = 4 \pm \sqrt{3}$

C $x = -2 \pm \sqrt{3}$

D $x = 2 \pm \sqrt{3}$

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23 **The graph shown is a parabola of the form $y = ax^2 + bx + c$. The value of a is**

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

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24 **The height, in metres, of a ball t seconds after it is kicked is given by $h(t) = -5t^2 + 25t + 30$. The number of seconds until the ball hits the ground is**

ANSWER _____

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25 **Expressed in vertex form, $y = 2x^2 + 8x + 3$ is**

A $y = 2(x + 2)^2 + 3$

B $y = 2(x - 2)^2 - 5$

C $y = 2(x + 2)^2 - 5$

D $y = (x + 2)^2 - 5$

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ANSWER KEY

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

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