ONTARIO PRINCIPLES OF MATHEMATICS, GRADE 10, ACADEMIC (MPM2D) · UNIT A · 25 QUESTIONS

Quadratic Relations — 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 parabola $y = 2(x - 3)^2 - 1$ is**

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

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2 **The vertex of the parabola $y = -(x + 2)^2 + 4$ is**

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

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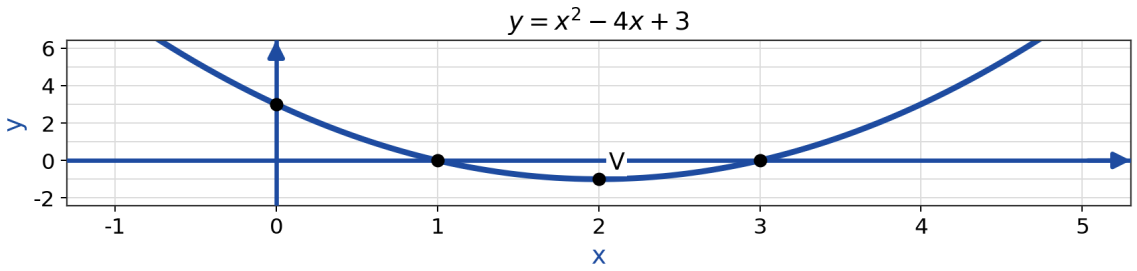
3 **The graph shows a parabola with its vertex marked V. The coordinates of V are**



- **A** (2, 1)
- **B** (2, -1)
- **C** (-2, -1)
- **D** (2, -3)

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4 **The vertex of the parabola $y = -2(x - 1)^2 + 5$ is**

- **A** (-1, 5)
- **B** (1, -5)
- **C** (-1, -5)
- **D** (1, 5)

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5 **The parabola $y = 2x^2$ opens upward or downward, and has a maximum or a minimum value? The parabola opens**

- A upward and has a minimum
- B upward and has a maximum
- C downward and has a minimum
- D downward and has a maximum

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6 **The parabola $y = -3x^2$ opens upward or downward, and has a maximum or a minimum value? The parabola opens**

- A upward and has a minimum
- B downward and has a maximum
- C upward and has a maximum
- D downward and has a minimum

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7 **The parabola $y = -x^2$ opens upward or downward, and has a maximum or a minimum value? The parabola opens**

- **A** upward and has a minimum
- **B** upward and has a maximum
- **C** downward and has a maximum
- **D** downward and has a minimum

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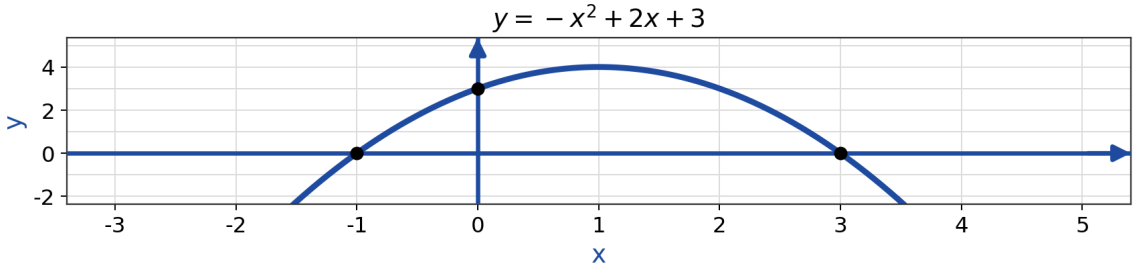
8 **The graph shows a parabola. The zeros of the relation are**



- **A** x = 1, x = 3
- **B** x = -1, x = -3
- **C** x = -1, x = 3
- **D** x = 1, x = -3

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9 **The axis of symmetry of the parabola $y = x^2 - 6x + 5$, is**

ANSWER _____

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10 **The y-intercept of the parabola $y = 2x^2 - 3x + 5$ is**

ANSWER _____

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11 **The zeros of the quadratic relation $y = x^2 + 3x - 10$ are**

A $x = -2, x = -5$

B $x = 2, x = 5$

C $x = 2, x = -5$

D $x = -2, x = 5$

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12 **The zeros of the quadratic relation $y = x^2 - x - 12$ are**

- **A** $x = 3, x = 4$
- **B** $x = -3, x = -4$
- **C** $x = 3, x = -4$
- **D** $x = -3, x = 4$

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13 **The zeros of the quadratic relation $y = x^2 - 7x + 6$ are**

- **A** $x = 6, x = 1$
- **B** $x = -6, x = 1$
- **C** $x = 6, x = -1$
- **D** $x = -6, x = -1$

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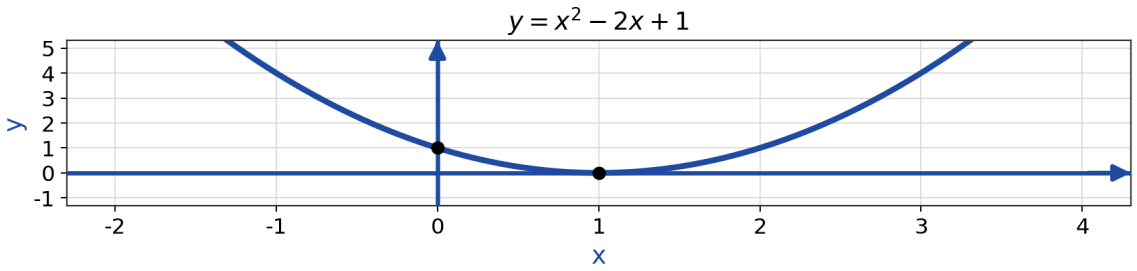
14 **The graph shows a parabola. How many x-intercepts does the graph have?**



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

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15 **For the quadratic equation $2x^2 - 4x + 1 = 0$, the discriminant, $b^2 - 4ac$, is**

ANSWER _____

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16 **The quadratic equation $x^2 + 6x + 9 = 0$ has**

A two distinct real roots

B no real roots

C two imaginary roots

D one real root

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17 **The quadratic equation $x^2 + 4x + 3 = 0$ has**

A two distinct real roots

B one real root

C no real roots

D two imaginary roots

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18 **Written in vertex form, the relation $y = x^2 + 6x + 5$ is**

- **A** $y = (x - 3)^2 - 4$
- **B** $y = (x + 3)^2 - 4$
- **C** $y = (x + 3)^2 + 5$
- **D** $y = (x - 3)^2 + 5$

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19 **Written in vertex form, the relation $y = x^2 - 8x + 3$ is**

- **A** $y = (x + 4)^2 - 13$
- **B** $y = (x - 4)^2 + 3$
- **C** $y = (x - 4)^2 - 13$
- **D** $y = (x + 4)^2 + 3$

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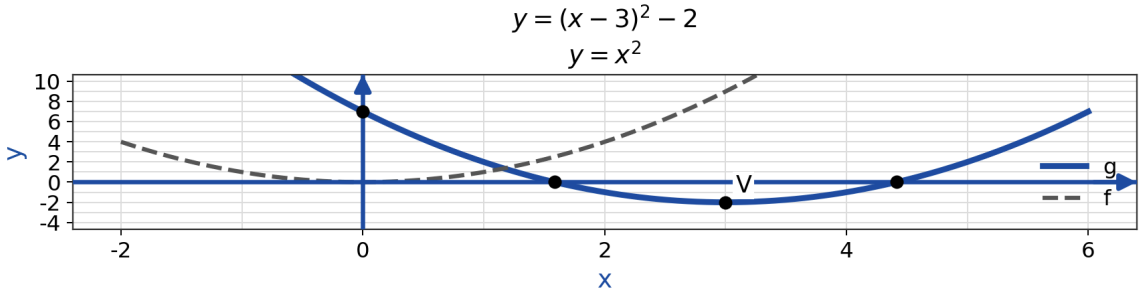
20 **The graph shows y = x² as a dashed curve and a transformed parabola as a solid curve. The vertex of the solid curve is**



A (3, 2)

B (-3, -2)

C (3, -2)

D (-3, 2)

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21 **A ball is thrown upward. Its height, in metres, after t seconds is h(t) = -5t² + 30t. The time, in seconds, when the ball reaches its maximum height is**

ANSWER _____

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22 **A ball is thrown upward. Its height, in metres, after t seconds is $h(t) = -5t^2 + 20t$. The maximum height, in metres, reached by the ball is**

ANSWER _____

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23 **A ball is thrown upward. Its height, in metres, after t seconds is $h(t) = -5t^2 + 40t$. The height, in metres, of the ball after 2 seconds is**

ANSWER _____

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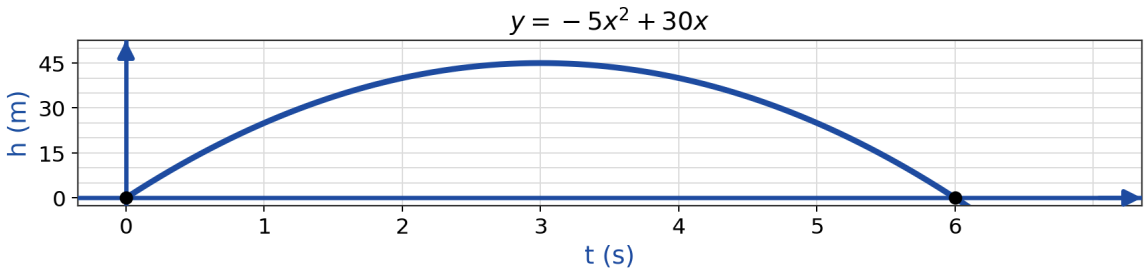
24 **The graph shows the height, in metres, of a ball after t seconds. The maximum height, in metres, reached by the ball is**



A 30

B 45

C 60

D 15

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25 **A rectangular garden has length x + 4 metres and width x metres. Its area is 45 m². The width, in metres, is**

ANSWER _____

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ANSWER KEY

1.	A	**10.**	5	**19.**	C
2.	B	**11.**	C	**20.**	C
3.	B	**12.**	D	**21.**	3
4.	D	**13.**	A	**22.**	20
5.	A	**14.**	B	**23.**	60
6.	B	**15.**	8	**24.**	B
7.	C	**16.**	D	**25.**	5
8.	C	**17.**	A		
9.	3	**18.**	B		

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