Roots, intercepts, symmetry and turning point

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. For $y = (x + 2)(x - 4)$, state both x-intercepts. [2 marks]

$x + 2 = 0$ or $x - 4 = 0$.

Answer: $(-2, 0), (4, 0)$

2. Find the y-intercept of $y = x^2 - 6x + 8$. [2 marks]

Substitute $x = 0$.

Answer: $(0, 8)$

3. Find the axis of a parabola with roots 3 and 9. [2 marks]

$(3 + 9)/2 = 6$.

Answer: $x = 6$

4. Find the turning point of $y = (x - 2)(x - 6)$. [3 marks]

The axis is $x = 4$.

At 4, $y = 2(-2) = -4$.

Answer: $(4, -4)$

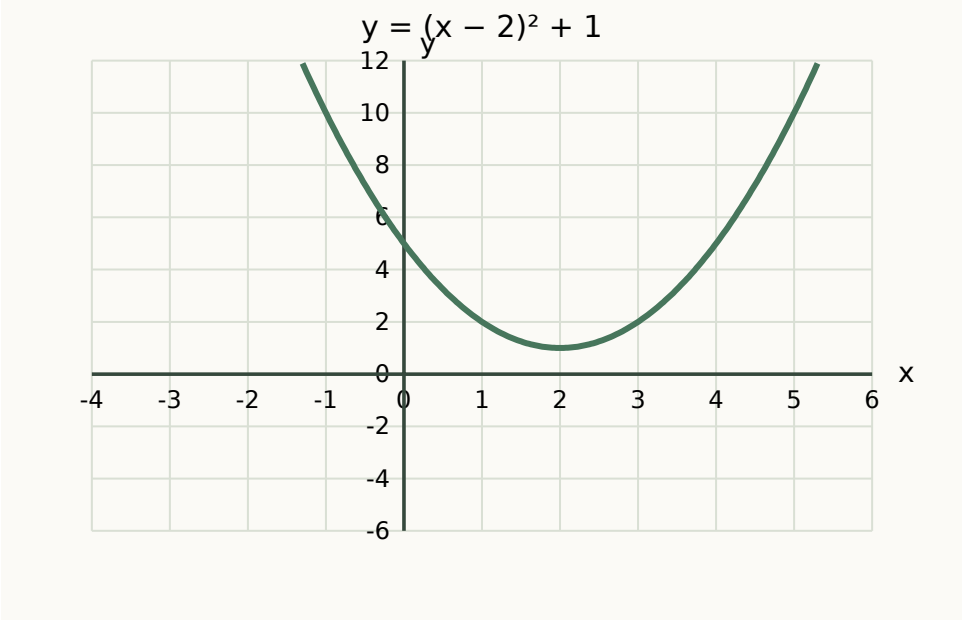
5. Find the turning point of $y = -x^2 + 9$ and state its type. [2 marks]

The axis is $x = 0$ and $y = 9$ there.

The parabola opens downwards.

Answer: $(0, 9)$, maximum.

6. Use the graph to give the minimum value and the number of real roots of $y = (x - 2)^2 + 1$. [3 marks]



The lowest point is $(2, 1)$, above the x-axis.

The curve never reaches $y = 0$.

Answer: Minimum 1; no real roots.