Expanded, factored and vertex forms

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. Expand $y = (x - 2)(x + 5)$. [2 marks]

The middle terms are $5x - 2x = 3x$.

Answer: $y = x^2 + 3x - 10$

2. Write $y = x^2 - 4x - 5$ in factored form. [2 marks]

The factor pair is $-5, 1$.

Answer: $y = (x - 5)(x + 1)$

3. Write $y = x^2 + 4x + 1$ in vertex form. [2 marks]

Add and subtract 4.

Answer: $y = (x + 2)^2 - 3$

4. Write $y = -2(x - 1)^2 + 8$ in expanded form. [2 marks]

Expand the square before multiplying by -2.

Answer: $y = -2x^2 + 4x + 6$

5. A parabola has roots 1 and 5 and passes through $(0, 10)$. Find its rule. [3 marks]

$y = a(x - 1)(x - 5)$; $10 = 5a$, so $a = 2$.

Answer: $y = 2(x - 1)(x - 5)$

6. A parabola has vertex $(2, -3)$ and passes through $(0, 5)$. Find its rule. [3 marks]

Use $y = a(x - 2)^2 - 3$.

$5 = 4a - 3$, giving $a = 2$.

Answer: $y = 2(x - 2)^2 - 3$