Vertex/intercept/axis features

6 questions | 14 marks

Equivalent correct methods earn the corresponding marks.

1. State vertex/axis for $y = (x-5)^2 + 2$. [2 marks]

Read square form.

Answer: Vertex (5,2); axis x=5.

2. Find the y-intercept of $y = -2(x+1)^2 + 8$. [2 marks]

At x=0, y=-2+8=6.

Answer: (0,6)

3. Find x-intercepts of $y = (x-1)^2 - 9$. [2 marks]

Set $(x-1)^2 = 9$.

Then x-1 is plus/minus 3.

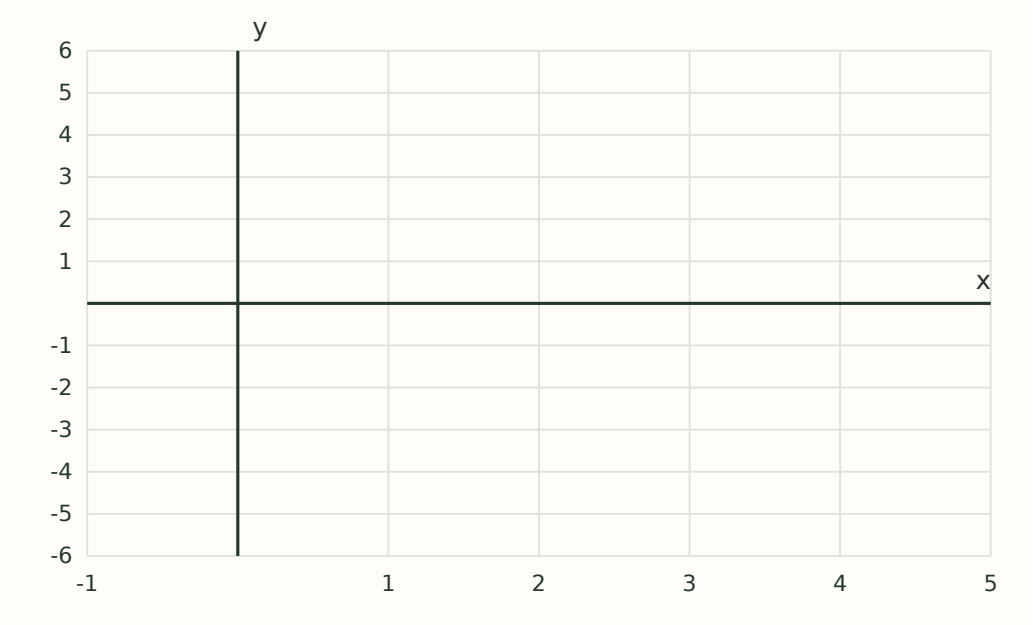
Answer: (-2,0),(4,0)

4. Find the vertex of $y = x^2 + 6x + 4$. [2 marks]

Rewrite as $(x+3)^2 - 5$.

Answer: (-3,-5)

5. Sketch $y = -(x-2)^2 + 4$, labelling vertex/intercepts. [4 marks]



Solve $(x-2)^2 = 4$.

Use symmetry x=2.

Answer: Vertex (2,4); roots (0,0),(4,0); opens downward.

6. Give domain/range of $y = 3(x+1)^2 - 6$ for real x. [2 marks]

The square is nonnegative.

Its minimum is zero at x=-1.

Answer: Domain all real numbers; range $y \geq -6$.