

1. A parabola turns at (3, -4). What is the vertex?

The turning point

Answer: (3, -4)

2. Same parabola: what is the axis of symmetry?

Vertical line through vertex x

Answer: $x = 3$

3. Read the vertex and axis from a graph turning at (-2, 5). (Trainer echo - Jan 2026 Q1 skill!)

Turn point; vertical line

Answer: vertex (-2,5); axis $x = -2$

4. Does the vertex of $y = x^2 - 6x + 5$ (opens up) give a max or a min?

$a > 0$ opens up

Answer: minimum

5. Does $y = -x^2 + 2x$ have a max or min?

$a < 0$

Answer: maximum

6. A parabola has axis of symmetry $x = 4$ and passes through (2, 7). By symmetry, name another point.

2 is 2 left of 4; mirror is 2 right = 6

Answer: (6, 7)

7. The zeros of a parabola are $x = 1$ and $x = 7$. Where is the axis of symmetry?

Midway: $(1 + 7)/2$

Answer: $x = 4$

8. A parabola turns at (0, 4) opening down. Which is bigger: y at $x = 0$ or at $x = 3$?

Vertex is the maximum

Answer: y at $x = 0$ (the max)

9. Graph $y = -(1/3)x^2 + 4$: state the vertex and axis. (Trainer echo - Aug 2025 Q31!) ★ challenge

No bx term: vertex on the y-axis

Answer: vertex (0, 4); axis $x = 0$

10. A parabola has vertex (2, -1) and passes through (5, 8). Use symmetry to find the point mirroring (5, 8).

5 is 3 right of $x = 2$; mirror 3 left = -1

Answer: (-1, 8)