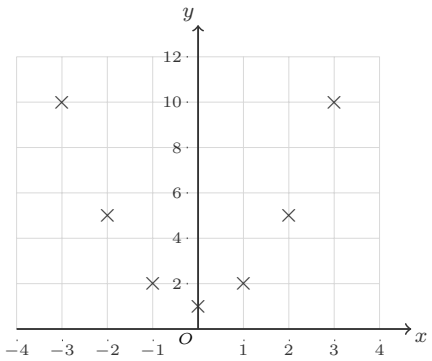
Going up from the x-axis gives one answer. Going across from the y-axis gives two. Draw both dashed lines every time.

1 The graph of $y = x^2 + 1$ is drawn.



(a) Find y when $x = 2$ (1)

(b) **Find both values of x when $y = 10$.** (2)

(c) **Find both values of x when $y = 5$.** (2)

(d) Write down the equation of the line of symmetry (1)

(6 marks)

2 Three curves have their lowest points at $(0, 0)$, $(0, 4)$ and $(0, -2)$.

(a) Match each lowest point to one of $y = x^2 - 2$, $y = x^2$, $y = x^2 + 4$ (2)

(b) **Write down the rule you used.** (2)

(4 marks)

3 A curve of the form $y = x^2 + a$ passes through the point $(3, 11)$.

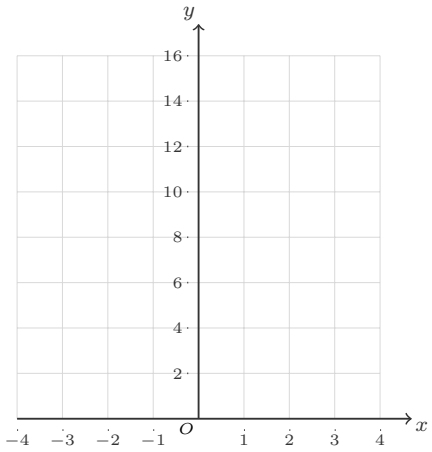
(a) Find a (2)

(b) Write down the equation of the curve (1)

(c) Write down the coordinates of its lowest point (1)

(4 marks)

4 On the grid, draw $y = x^2$ and $y = x^2 + 5$ on the same axes.



(a) Both curves (3)

(b) **Do the two curves ever meet? Explain.** (2)

(5 marks)