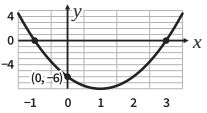
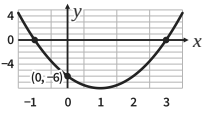


a Find the turning point of $y = 3 + 4x - x^2$ $(2, 7)$ completing the square with $-x^2$	b Find the turning point of $y = 3x^2 + 6x - 1$ $(-1, -4)$ a turning point with $a = 3$	c How many roots does $y = x^2 + 6x + 9$ have? 1 one root: a perfect square	d Find its equation  $y = 2x^2 - 4x - 6$ the equation from a graph, a not 1
e Find the exact roots of $y = x^2 - 6x + 4$ $x = 3 \pm \sqrt{5}$ exact roots: complete the square	f A quadratic has turning point $(2, 5)$ and y intercept 1. Find its equation. $y = -x^2 + 4x + 1$ a turning point and one other point	g Show that $x^2 - 6x + 10$ is positive for every value of x $(x - 3)^2 + 1 \geq 1$ proving a quadratic is always positive	h $y = x^2 + bx + c$ has roots $x = 1 \pm \sqrt{3}$. Find b and c. $b = -2, c = -2$ the equation from surd roots
i Find the turning point of $y = x^2 + 2ax + 3$ in terms of a $(-a, 3 - a^2)$ a turning point in terms of a letter	j $y = x^2 - 4x + k$ has no roots. Find the range of values of k. $k > 4$ no roots: a range for k	k Find the two values of k for which $y = x^2 - 2kx + k + 6$ touches the x axis $k = 3, k = -2$ touching the axis: a quadratic in k	l Find the equation of the quadratic through $(0, 3)$, $(1, 4)$ and $(2, 9)$ $y = 2x^2 - x + 3$ a quadratic through three points

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