



Show all working – <u>No</u> calculator allowed.



1. Each diagram below shows parabolas with equations $y = kx^2$. For each find k:



2. Each of the parabolas below are in the form $y = (x - a)^2 + b$. Find the values of a and b



- **3.** For each parabola find the following:
 - i) The equation of the axis of symmetry.
 - **ii**) The coordinates of the Turning Point.
 - iii) The nature of the TP

(a) $y = (x - 2)^2 - 6$ (b) $y = (x + 3)^2 - 1$ (c) $y = (x + 5)^2 + 4$ (d) $y = 2 - (x - 3)^2$

- Sketch the graph of each of these on plain paper.Each graph must show clearly the intersections with the axis and the turning point.
 - **a)** y = (x-1)(x-3) (**b**) y = (x+4)(x-4) (**c**) y = (x-3)(x+7)
- **5.** Solve each of these equations:
 - **a**) (x-3)(x+4) = 0 (**b**) (x+1)(x-7) = 0 (**c**) (2x-5)(x+2) = 0
- 6. Determine the Nature of the roots for each of these:
 - **a)** $3x^2 + 5x + 6 = 0$ (**b)** $2x^2 3x 5 = 0$ (**c)** $4x^2 4x + 1 = 0$



7. Solve these equations correct to 2 decimal places:

a)	$x^2 + 5x + 3 = 0$	(b) $3x^2 - 2x - 7 = 0$	(c) $2x^2 - 3x - 5 = 0$
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