

Quadratics Test

No calculators allowed! If $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$.

1. Factorise fully

(a) $x^2 + x - 12$.

(b) $6x^2 + x - 2$.

(c) $px + py + qx + qy$.

(d) $4x^2 - 25$.

(e) $20ax^2 - 50ax + 30a$.

2. Sketch

(a) $y = (x - 3)(2x + 1)$. [I need vertex.]

(b) $y = (4 - x)(x - 3)$. [I don't need vertex here.]

(c) $y = x^2 - 2x - 8$. [I need vertex.]

3. Complete the square

(a) $y = x^2 + 4x$.

(b) $y = 2x^2 - 8x + 1$.

(c) $-4x^2 + 16x + 7$.

4. Solve

(a) $x^2 < 9$.

(b) $x^2 + 12 \geq 7x$.

5. Solve by the formula $x^2 - 5x + 2 = 0$.

6. State the coordinate and the nature (maximum or minimum) of the turning point of

(a) $y = -3(x - 2)^2 + 4$.

(b) $8(3 - x)^2 + 5$.