1. Find the **vertex** for the following quadratics by using the Completing the Square technique **or** the Standard form formula (x=-b/2a). (10 marks)

(a) $y = x^2 + 8x$

(b) $y = x^2 - 10x + 7$

(c) $y = -3x^2 - 18x$

(d) $y = 2x^2 - 16x - 9$

2. **Solve** the following using the appropriate method (a factoring approach, the quadratic formula, other). Decimal answers are acceptable. (16 marks)

(a) $0 = x^2 + 12x$

(b) $0 = x^2 - 12x + 9$

(c) $11 = -2x^2 - 16x$

(d) $5 = 3x^2 - 10x - 6$

(e) $(x - 6)(5 + x) = 0$

(f) $2(x + 3)^2 - 7 = 25$

3. Without solving, determine the **number** of roots/x intercepts each equation has. Show appropriate work.(5 marks)

a) $y = (x + 2)(x - 4)$ b) $y = 4x^2 + 12x + 9$ c) $y = 2.5x^2 - 5.1x - 3.4$

For quadratics in the form, $ax^2 + bx + c = 0$, $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$