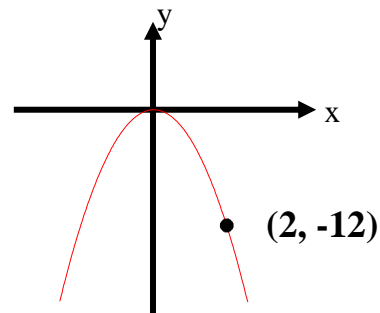# Intermediate 2 - Unit 3 - Practice NAB 1

Outcome 1

1. Express $\dfrac{(x+8)(x+1)}{(x+1)^2}$ in its simplest form. **(1)**

2. Simplify: **a)** $\dfrac{9}{z} + \dfrac{4}{z}$ **(b)** $\dfrac{5}{y} - \dfrac{5}{b}$ **(c)** $\dfrac{x}{5a} \times \dfrac{p}{9}$ **(d)** $\dfrac{y}{b} \div \dfrac{2}{k}$ **(4)**

3. Change the subject of the formula to p: $Q = np + m$ **(2)**

4. Simplify: **a)** $\sqrt{175}$ **(b)** $\dfrac{\sqrt{169}}{\sqrt{36}}$ **(3)**

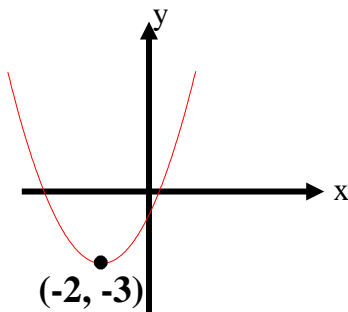**5.** Simplify: **a)** $\dfrac{g^8 \times g^7}{g^6}$ **(b)** $9f^7 \times 5f^{-3}$ **(4)**

Outcome 2

6. The graph shows a function of the form $y = kx^2$. Write down its equation.

(2, -12)

(1)

7.

(-2, -3)

The equation of the quadratic function shown is of the form $y = (x - a)^2 + b$. Write down its equation. **(2)**
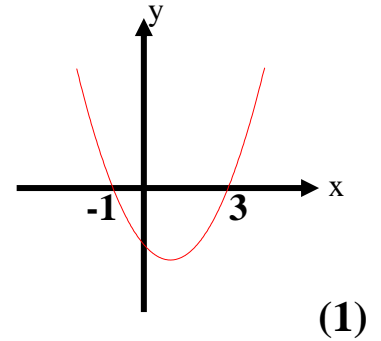
8. A quadratic function has the equation $1 - (x + 1)^2$ write down:

    a) the equation of its axis of symmetry   **(1)**

    b) the coordinates of the turning point and state whether it's a max or min.   **(2)**

9. **Use** this graph to solve the equation $x^2 - 2x - 3 = 0$

                                                                               (1)

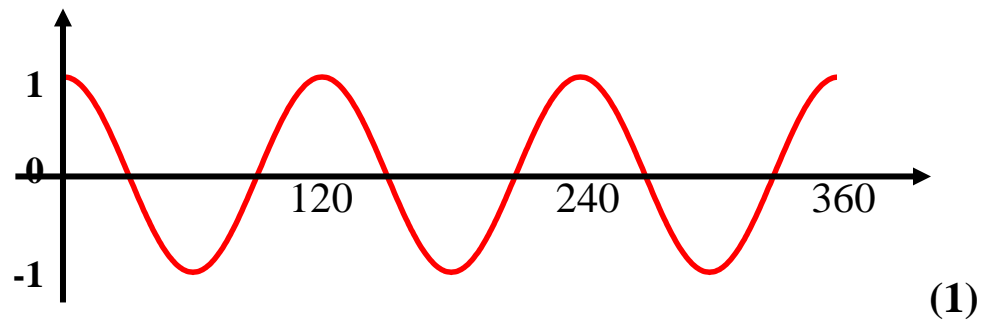**10.** Solve $y = x^2 - 4x + 3$ by factorization.   **(2)**

11. Use the quadratic formula to solve $y = x^2 + 4x - 4$ **(4)**

Outcome 3

12. Sketch the graph of $y = \sin 2x°$ for $0° \leq x \leq 360°$ **(2)**

13. This diagram shows the graph of $y = \cos bx°$ for $0° \leq x \leq 360°$

Write down the value of b.

                                                                                 (1)

14. Solve: $5\cos x° - 3 = 0,$ for $0° \leq x \leq 360°$ **(3)**

Intermediate 2 - Unit 3 - Practice NAB 1
Solutions

Outcome 1 - You need 9 out of 14 to pass.

1. $\dfrac{(x+8)}{(x+1)}$

2. **a)** $\dfrac{13}{z}$ **(b)** $\dfrac{5b-5y}{yb}$ **(c)** $\dfrac{xp}{45a}$ **(d)** $\dfrac{yk}{2b}$

3. $Q = np + m$

$Q - m = np$

$p = \dfrac{Q-m}{n}$

4. **a)** $5\sqrt{7}$ **(b)** $\dfrac{13}{6}$

5. **a)** g^9 **(b)** $45g^4$

Outcome 2 - You need 9 out of 13 to pass.

6.
$$y = kx^2$$
$$-12 = k \times 2^2$$
$$-12 = k \times 4$$
$$k = -3$$
$$y = -3x^2$$

7.
$$y = (x - a)^2 + b$$
$$y = (x + 3)^2 - 2$$

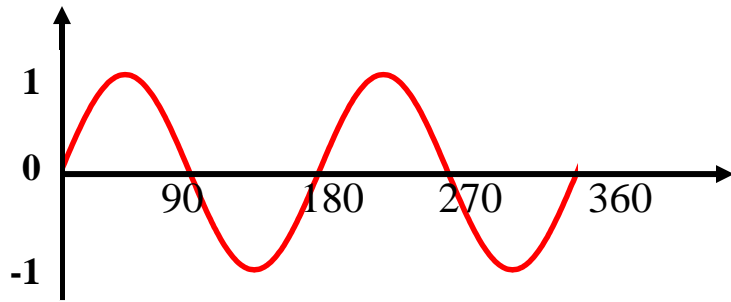**8.** **a)** $x = -1$ **(b)** Max @ $(-1, 1)$

9. $x = -1, 3$

10. $(x - 3)(x - 1)$ so $x = 1, 3$

11. $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \dfrac{-4 \pm \sqrt{4^2 - 4(1)(-4)}}{2}$

$x = \dfrac{-4 \pm \sqrt{32}}{2}$

$x = 0.83, -4.83$

12.

13. $b = 3$

14. $5\cos x° - 3 = 0$

$5\cos x° \quad = 3$

$\cos x° \quad = {}^3/_5$

$x° \quad = 53.13°$ or $360 - 53.13 = 306.87°$