Intermediate 2 - Unit 3 - Practice NAB 2

Outcome 1

1. Express $\dfrac{(2x+3)(x+2)}{(x+2)^2}$ in its simplest form **(1)**

2. Simplify: **a)** $\dfrac{5}{x}+\dfrac{3}{x}$ **(b)** $\dfrac{2}{y}-\dfrac{2}{x}$ **(c)** $\dfrac{3q}{r}\times\dfrac{p}{2}$ **(d)** $\dfrac{p}{3}\div\dfrac{q}{r}$ **(4)**
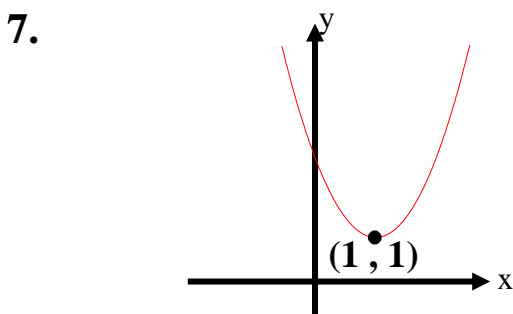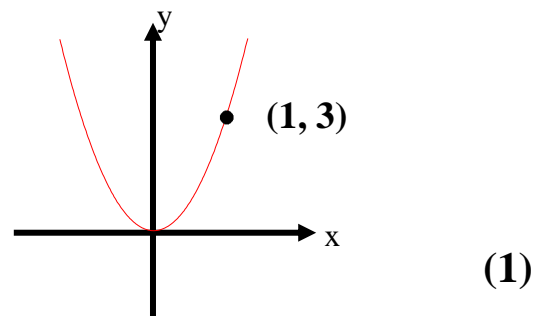
3. Change the subject of the formula to r: $p = qr + s$ **(2)**

4. Simplify: **a)** $\sqrt{18}$ **(b)** $\dfrac{\sqrt{9}}{\sqrt{4}}$ **(3)**

5. Simplify: **a)** $\dfrac{y^3 \times y^5}{y^2}$ **(b)** $2a^{\frac{3}{2}} \times 5a^{\frac{-1}{2}}$ **(4)**

Outcome 2

6. The graph shows a function of the form $y = kx^2$. Write down its equation.
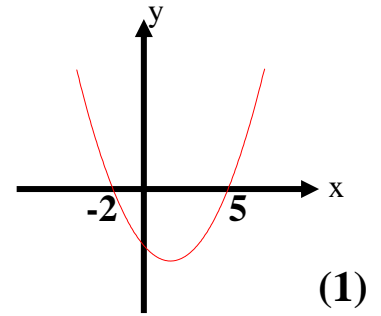
(1, 3)

(1)

7.

(1 , 1)

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 $y = (x + 3)^2 - 2$ 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 $x^2 - 3x - 10 = 0$

(1)

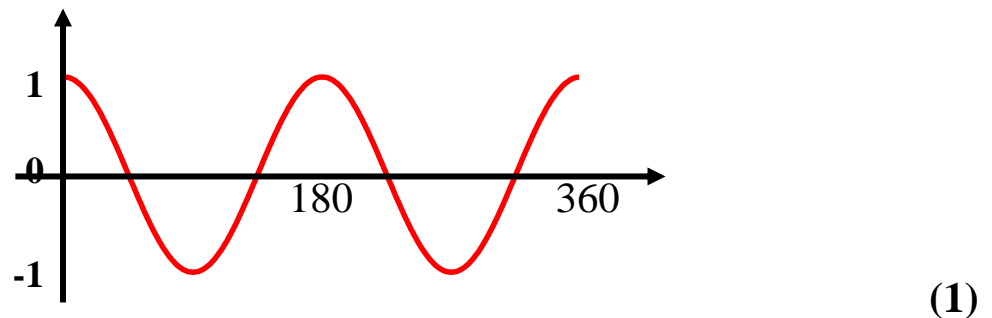**10.** Solve $y = x^2 + 7x + 6$ by factorization. **(2)**

11. Use the quadratic formula to solve $y = x^2 + 3x - 1$ **(3)**

Outcome 3

12. Sketch the graph of $y = \sin 3x°$ for $0° \le x \le 360°$ **(2)**

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

Write down the value of b.

(1)

14. Solve: $4\sin x° + 3 = 0$, for $0° \le x \le 360°$ **(3)**

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Solutions

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

1. $\dfrac{(2x+3)}{(x+2)}$

2.   **a)** $\dfrac{8}{x}$ **(b)** $\dfrac{2x-2y}{xy}$ **(c)** $\dfrac{3pq}{2r}$ **(d)** $\dfrac{pr}{3q}$

3. $p = qr + s$ **4.**   **a)** $3\sqrt{2}$ **(b)** $\dfrac{3}{2}$

  $p - s = qr$

  $r = \dfrac{p-s}{q}$ **5.**   **a)** y^6 **(b)** $10a$

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

6. $y = kx^2$ **7.** $y = (x - a)^2 + b$
  $3 = k \times 1^2$ $y = (x - 1)^2 + 1$
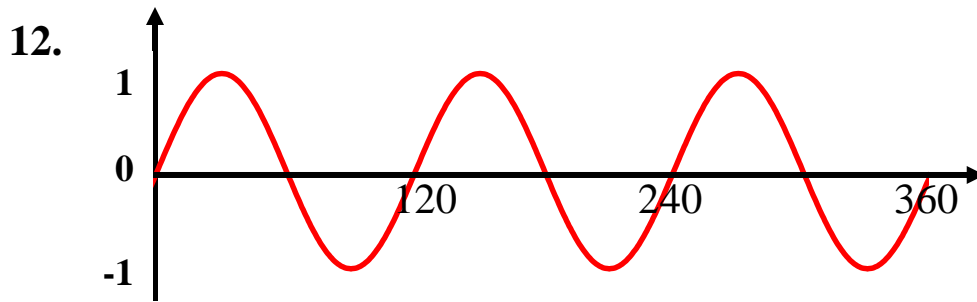 $3 = k \times 1$
  $k = 3$
  $y = 3x^2$

8.   **a)** $x = -3$ **(b)** Min @ $(-3 , -2)$

9. $x = -2, 5$

10. $(x + 6)(x + 1)$ so $x = -6, -1$

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

  $x = \dfrac{-3 \pm \sqrt{3^2 - 4(1)(-1)}}{2}$

  $x = \dfrac{-3 \pm \sqrt{13}}{2}$

  $x = 0.30, -3.30$

12.

13. $b = 2$

14. $4\sin x° + 3 = 0$

$\quad\quad 4\sin x° \quad = -3$

$\quad\quad\ \sin x° \quad = {}^{-3}/_4$

$\quad\quad\quad\ x° \quad = 180 + 48.59 \ \text{ or } \ 360 - 48.59$

$\quad\quad\quad\quad\quad\ = 228.59, \ 311.41°$