National 5 – Home Ex 4 SOLUTIONS

1. $x^2 - 6x + 7 = (x - 3)^2 - 2$

2. Write each of the following as a single fraction

(a) $\dfrac{3}{4x} - \dfrac{2}{x^2}$

$= \dfrac{3x}{4x^2} - \dfrac{8}{4x^2}$

$= \dfrac{3x-8}{4x^2}$

(b) $\dfrac{5}{9y} \times \dfrac{2}{(y-5)}$

$= \dfrac{10}{9y(y-5)}$

(c) $\dfrac{9}{2x^2+4} \div \dfrac{3}{x^2+2}$

$= \dfrac{9}{2(x^2+2)} \times \dfrac{(x^2+2)}{3}$

$= \dfrac{3}{2} \, or \, 1\dfrac{1}{2}$

(d) $\dfrac{x+3}{x-3} \times \dfrac{x^2-9}{6x+18}$

$= \dfrac{(x+3)}{(x-3)} \times \dfrac{(x+3)(x-3)}{6(x+3)}$

$= \dfrac{(x+3)}{6}$

3. Express $10 - 4x - x^2 = -1(x + 2)^2 + 14$

4. Write the following in their simplest form

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

$= \dfrac{(2x-1)}{(3x-2)}$

(b) $\dfrac{(4x-4)^2(x-1)}{(x-1)^5(4x-1)^4}$

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

(c) $\dfrac{2x^2-50}{3x-15}$

$= \dfrac{2(x-5)(x+5)}{3(x-5)}$

$= \dfrac{2(x+5)}{3}$

(d) $\dfrac{x^2-3x-4}{3x^2-48}$

$= \dfrac{(x-4)(x+1)}{3(x-4)(x+4)}$

$= \dfrac{(x+1)}{3(x+4)}$

5. $x^2 + 3x = (x + 3/2)^2 - 9/4$