

Skills Check - Unit 2

$$f(x) = 4x^2 - 5x + 4$$

$$g(x) = 2x - 3$$

KEP

a) Find  $f\left(\frac{2}{3}\right)$

$$\begin{aligned} f\left(\frac{2}{3}\right) &= 4\left(\frac{2}{3}\right)^2 - 5\left(\frac{2}{3}\right) + 4 \\ &= 4\left(\frac{4}{9}\right) - 5\left(\frac{2}{3}\right) + 4 \\ &= \frac{16}{9} - \frac{10}{3} + 4 \\ &= \frac{16}{9} - \frac{30}{9} + \frac{36}{9} \\ &= \frac{22}{9} \end{aligned}$$

b) Find  $(f-g)(x) \Rightarrow f(x) - g(x)$

$$\begin{aligned} &4x^2 - 5x + 4 - (2x - 3) \\ &4x^2 - 5x + 4 - 2x + 3 \end{aligned}$$

$$\boxed{4x^2 - 7x + 7}$$

c)  $(g \circ f)(5) = g(f(5))$   
Square

$$\begin{aligned} &g[4(5)^2 - 5(5) + 4] \\ &g[79] \\ &= 2(79) - 3 \\ &= \boxed{155} \end{aligned}$$

$\left(\frac{-5}{4}\right)^2$   
 $\left(\frac{-5}{8}\right)^2$   
 $\frac{25}{64}$

d) Set  $f(x) = 0$  and Complete the Square

$$\begin{aligned} 4x^2 - 5x + 4 &= 0 \\ x^2 - \frac{5}{4}x + 1 &= 0 \\ x^2 - \frac{5}{4}x + \frac{25}{64} &= -1 + \frac{25}{64} \\ \left(x - \frac{5}{8}\right)^2 &= \frac{-39}{64} \\ x - \frac{5}{8} &= \pm \sqrt{\frac{-39}{64}} \\ x &= \frac{5}{8} \pm \frac{i\sqrt{39}}{8} \\ x &= \frac{5 \pm i\sqrt{39}}{8} \end{aligned}$$