

Question 7

a) Multiply out and simplify $(x+5)(x^2-2x+6)$.

$$\begin{aligned}(x+5)(x^2-2x+6) &= x(x^2-2x+6)+5(x^2-2x+6) \\ &= x^3-2x^2+6x+5x^2-10x+30 \\ &= x^3-2x^2+5x^2+6x-10x+30 \\ &= x^3+3x^2-4x+30\end{aligned}$$

b) Factorise fully $ac-ad-bd+bc$.

$$\begin{aligned}ac-ad-bd+bc &= a(c-d)-b(c-d) \\ &= (a-b)(c-d)\end{aligned}$$

c) Write the following as a single fraction in its simplest form

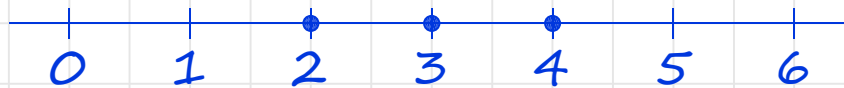
$$\frac{x+2}{3} + \frac{x-3}{4}$$

$$\begin{aligned}\frac{x+2}{3} + \frac{x-3}{4} &= \frac{4(x+2)}{4(3)} + \frac{3(x-3)}{3(4)} \\ &= \frac{4(x+2)}{12} + \frac{3(x-3)}{12} \\ &= \frac{4(x+2)+3(x-3)}{12}\end{aligned}$$

$$\begin{aligned} &= \frac{4(x+2)+3(x-3)}{12} \\ &= \frac{4x+8+3x-9}{12} \\ &= \frac{4x+3x+8-9}{12} \\ &= \frac{7x-1}{12} \end{aligned}$$

Question 8

a) Complete the inequality in n below so that it has the solution set shown.



n is any natural number greater or equal to 2 and less than or equal to 4.
 $2 \leq n \leq 4, n \in \mathbb{N}$

b) Complete the inequality in x below so that there is only one possible value of x , where x is an element of the set of Real numbers.

$$2 \leq x \leq 2, x \in \mathbb{R}$$