



- (c) Find the set of all real values of  $x$  for which  $\frac{2x-5}{x-3} \leq \frac{5}{2}$ .

$$x \neq 3$$

$$\frac{(2x-5)(2x-5)}{(x-3)} \leq \frac{5(2x-5)}{2}$$

$$(2x-5)(2x-5) \leq 5(x^2-6x+9)$$

$$4x^2 - 10x - 10x + 25 \leq 5x^2 - 30x + 45$$

$$-x^2 - 22x + 25 \leq 0$$

$$-x^2 + 8x - 15 \leq 0$$

$$x^2 - 8x + 15 \geq 0 \quad +15$$

$$(x-3)(x-5) \geq 0 \quad -3-5$$


$$x \leq 3 \text{ or } x \geq 5$$



$$x \leq 3 \text{ or } x \geq 5$$

$$\text{ISM } (0, 4, 7, 11, 15)$$

Q2. (a) Solve  $2|x+4| \leq |x+5|$

$$\begin{aligned}
 (2|x+4|)^2 &\leq (|x+5|)^2 \\
 4(x^2+8x+16) &\leq x^2+10x+25 \\
 4x^2+32x+64 &\leq x^2+10x+25 \\
 3x^2+22x+39 &\leq 0 \quad +117 \\
 3x^2+9x+13x+39 &= 0 \quad +9+13 \\
 3x(x+3)+13(x+3) &= 0 \\
 x &= -3 \text{ or } x = -13/3.
 \end{aligned}$$


10m  
(0, 2, 5, 8, 10)

(b) Using the same axes and scales, graph the functions  $f(x) = |3x+5|$  and  $h(x) = |x-1|$ . Using your graph, find the values of  $x \in \mathbb{R}$  for which:

- (i)  $f(x) = h(x)$  3m (0, 3)
- (ii)  $f(x) < h(x)$  2m (0, 3)
- (iii)  $h(x) \geq f(x)$  2m (0, 2)

6m x 2  
(0, 2, 4, 6)

