

IB Pre HL More Practice of Modulus function inequalities: Name: Key

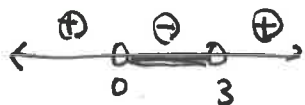
Solving modulus inequalities: a) Algebraically and b) Graphically.

1) : $(|2x-3|)^2 < (3)^2$

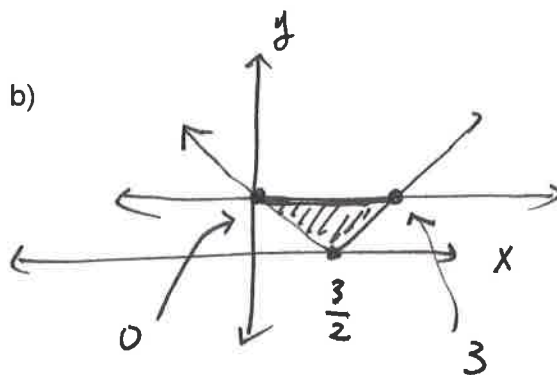
a) $4x^2 - 12x + 9 < 9$

$$4x^2 - 12x < 0$$

$$4x(x-3) < 0$$



$(0, 3)$

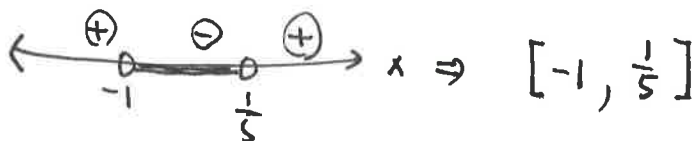


2) $3|x| \leq |1-2x|$

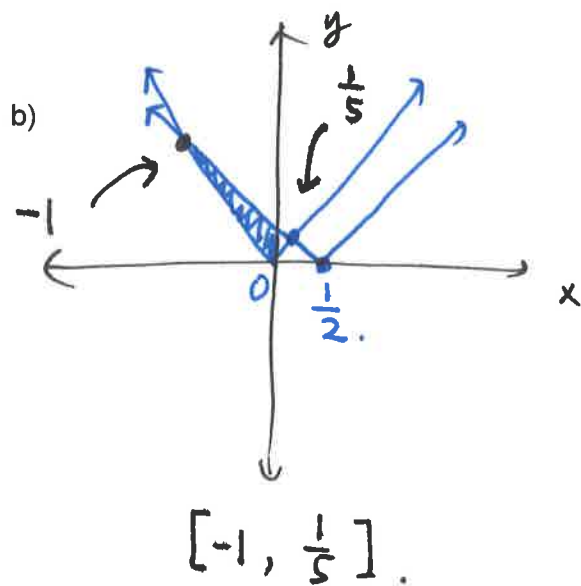
a) $9x^2 \leq 1 - 4x + 4x^2$

$$5x^2 + 4x - 1 \leq 0$$

$$(5x-1)(x+1) \leq 0$$



$x \Rightarrow [-1, \frac{1}{5}]$



3) $|1-4x| \geq 2|x-1|$

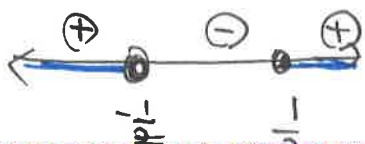
a)

$$|1-4x|^2 \geq (2|x-1|)^2$$

$$1 - 8x + 16x^2 \geq 4(x^2 - 2x + 1)$$

$$4x^2 - 1 \geq 0$$

$$(2x+1)(2x-1) \geq 0$$



$(-\infty, -\frac{1}{2}) \cup (\frac{1}{2}, \infty)$

