3.5) Quadratic inequalities

Worked example	Your turn
Solve: $x^2 - 5x + 6 = 0$	Solve: $x^2 - 4x + 3 < 0$ $1 < x < 3$
$x^2 - 5x + 6 < 0$	
$x^2 - 5x + 6 \leq 0$	

Worked example	Your turn
Solve: $x^2-5x+6=0$	Solve: $x^2-4x+3>0$
$x^2-5x+6>0$	$x<1 \cup x>3$
$x^2-5x+6\geq 0$	

Worked example	Your turn
Solve: $$2x^2 - 7x + 3 \leq 0$$ $$2x^2 - 3x - 5 < 0$$	Solve: $$2x^2 - 7x + 6 \leq 0$$ $$\frac{3}{2} \leq x \leq 2$$

Worked example	Your turn
Solve: $$2x^2 + x - 6 \geq 0$$ $$2x^2 + x - 6 > 0$$	Solve: $$3x^2 + x - 2 \geq 0$$ $$x \leq -1 \cup x \geq \frac{2}{3}$$

Worked example	Your turn
Find the set of values of x for which: $3 + 5x - 2x^2 < 0$	Find the set of values of x for which: $3 - 5x - 2x^2 < 0$ $x < -3$ or $x > \frac{1}{2}$

Worked example	Your turn
Solve: $$x^2 + 5x + 23 \leq -3x + 8$$ $$x^2 - 14x + 57 > 2x - 3$$	Solve: $$x^2 + 7x + 38 < -7x - 2$$ $$-10 < x < -4$$

Worked example	Your turn
Solve: $x^2 < 9$ $2x^2 \leq 8$	Solve: $x^2 < 16$ $-4 < x < 4$

Worked example	Your turn
Solve: $$x^2 > 25$$ $$2x^2 \geq 2$$	Solve: $$x^2 > 36$$ $$x < -6 \cup x > 6$$

Worked example	Your turn
Find the set of values for which both are true: $2(x-3) < 7-5x$ and $(3x-4)(5+x) < 0$	Find the set of values for which both are true: $3(x-2) < 8-2x$ and $(2x-7)(1+x) < 0$ $-1 < x < \frac{14}{5}$

Worked example	Your turn
Find the set of values for which $\frac{10}{x} > 5, x \neq 0$	Find the set of values for which $\frac{6}{x} > 2, x \neq 0$ $0 < x < 3$

Worked example	Your turn
Find the set of values for which $\frac{5}{x-3} < 2$	Find the set of values for which $\frac{5}{x-2} < 3$ $x < 2$ or $x > \frac{11}{3}$

Worked example	Your turn
The equation $kx^2 - 5kx + 50 = 0$, where k is a constant, has no real roots. Prove that k satisfies the inequality $0 \leq k < 8$	The equation $kx^2 - 3kx + 9 = 0$, where k is a constant, has no real roots. Prove that k satisfies the inequality $0 \leq k < 4$ Proof