1 Find the set of values of x for which

a
$$2x + 1 < 7$$

h
$$3y - 1 > 20$$

c
$$2x-5>3$$

b
$$3x-1 \ge 20$$
 c $2x-5 > 3$ **d** $6+3x \le 42$

e
$$5x + 17 > 2$$

$$\mathbf{f} = \frac{1}{2}x + 7 < 8$$

g
$$9x - 4 \ge 50$$

e
$$5x + 17 \ge 2$$
 f $\frac{1}{3}x + 7 < 8$ **g** $9x - 4 \ge 50$ **h** $3x + 11 < 7$

i
$$18 - x > 4$$

i
$$10 + 4x \le 0$$

$$k 12 - 3x < 10$$

j
$$10 + 4x \le 0$$
 k $12 - 3x < 10$ **l** $9 - \frac{1}{2}x \ge 4$

2 Solve each inequality.

a
$$2y - 3 > y + 4$$

b
$$5p + 1 \le p + 3$$

c
$$x-2 < 3x-8$$

d
$$a + 11 \ge 15 - a$$

e
$$17 - 2u < 2 + u$$

f
$$5 - b \ge 14 - 3b$$

$$\mathbf{g} \quad 4x + 23 < x + 5$$

h
$$12 + 3y \ge 2y - 1$$

f
$$5-b \ge 14-3b$$

i $16-3p \le 36+p$

$$i \quad 5(r-2) > 30$$

k
$$3(1-2t) \le t-4$$

j
$$5(r-2) > 30$$
 k $3(1-2t) \le t-4$ l $2(3+x) \ge 4(6-x)$

m
$$7(y+3)-2(3y-1)<0$$
 n $4(5-2x)>3(7-2x)$ **o** $3(4u-1)-5(u-3)<9$

$$\mathbf{n} \quad 4(5-2x) > 3(7-2x)$$

o
$$3(4u-1)-5(u-3) < 9$$

Find the set of values of x for which

a
$$x^2 - 4x + 3 < 0$$
 b $x^2 - 4 \le 0$

b
$$x^2 - 4 \le 0$$

c
$$15 + 8x + x^2 < 0$$
 d $x^2 + 2x \le 8$

$$x^2 + 2x \le 8$$

e
$$x^2 - 6x + 5 > 0$$

f
$$x^2 + 4x > 12$$

e
$$x^2 - 6x + 5 > 0$$
 f $x^2 + 4x > 12$ **g** $x^2 + 10x + 21 \ge 0$ **h** $22 + 9x - x^2 > 0$

h
$$22 + 9x - x^2 > 0$$

i
$$63 - 2x - x^2 \le 0$$
 j $x^2 + 11x + 30 > 0$ k $30 + 7x - x^2 > 0$ l $x^2 + 91 \ge 20x$

$$\mathbf{j} \quad x^2 + 11x + 30 > 0$$

$$k 30 + 7x - x^2 >$$

$$1 x^2 + 91 \ge 20x$$

Solve each inequality. 4

a
$$2x^2 - 9x + 4 \le 0$$
 b $2r^2 - 5r - 3 < 0$

b
$$2r^2 - 5r - 3 < 0$$

c
$$2-p-3p^2 \ge 0$$

d
$$2v^2 + 9v - 5 > 0$$

b
$$2r^2 - 3r - 3 < 0$$

e $4m^2 + 13m + 3 < 0$
b $x(x + 4) \le 7$

$$\mathbf{f} = 9x - 2x^2 < 10$$

$$\mathbf{g} \quad a^2 + 6 < 8a - 9$$

h
$$x(x+4) \le 7-2x$$

f
$$9x - 2x^2 \le 10$$

i $y(y+9) > 2(y-5)$

$$\int x(2x+1) > x + 6$$

1
$$2t + 3 \ge 3t(t-2)$$

$$(v-2)^2 \le 2v-1$$

$$(p+2)(p+3) \ge 20$$

n
$$(p+2)(p+3) \ge 20$$
 o $2(13+2x) < (6+x)(1-x)$

Giving your answers in terms of surds, find the set of values of x for which 5

a
$$x^2 + 2x - 1 < 0$$

b
$$x^2 - 6x + 4 > 0$$

a
$$x^2 + 2x - 1 < 0$$
 b $x^2 - 6x + 4 > 0$ **c** $11 - 6x - x^2 > 0$ **d** $x^2 + 4x + 1 \ge 0$

$$4 x^2 + 4x + 1 > 0$$

Find the value or set of values of k such that 6

a the equation $x^2 - 6x + k = 0$ has equal roots,

b the equation $x^2 + 2x + k = 0$ has real and distinct roots,

c the equation $x^2 - 3x + k = 0$ has no real roots.

d the equation $x^2 + kx + 4 = 0$ has real roots,

e the equation $kx^2 + x - 1 = 0$ has equal roots.

f the equation $x^2 + kx - 3k = 0$ has no real roots.

g the equation $x^2 + 2x + k - 2 = 0$ has real and distinct roots,

h the equation $2x^2 - kx + k = 0$ has equal roots,

i the equation $x^2 + kx + 2k - 3 = 0$ has no real roots.

i the equation $3x^2 + kx - x + 3 = 0$ has real roots.