

Practice Problems S1

1. Factor the following quadratic expressions:

(a) $x^2 - 3x - 10$

(b) $2x^2 + x - 6$

(c) $4x^2 - 9$.

2. Solve the following inequalities:

(a) $2x^2 + x < 6$

(b) $3 - 2x < |3x - 2|$

(c) $\frac{2x-1}{x+1} \geq \frac{2x+1}{x-1}$

(c) $|2x + 5| < 11$

(d) $\frac{1}{|x-1|} < 2$

(e) $\frac{(3x-2)(x+1)^2}{x(x-1)^3} \leq 0$

3. Find the equation of the line which passes through the point $P(3, 2)$ and is

(a) parallel,

(b) perpendicular

to the line $2y + 3x + 6 = 0$.

4. Find the centre and radius of the circle $x^2 + y^2 + 3x + 7y = \frac{3}{2}$ and identify the region represented by the inequality $x^2 + y^2 + 3x + 7y \leq \frac{3}{2}$.