

1. Find the roots of the following polynomials:

a) $x^2 - 4$	b) $x^2 - 5x + 6$	c) $3x^2 - 27$
d) $2x^2 - 16$	e) $x^2 + 3x + 2$	f) $x^2 - 2x - 8$
g) $x^2 + 2x + 1$	h) $2x^2 + 8x + 6$	i) $x^3 - 6x^2 + 11x - 6$
j) $x^3 - 5x^2 + 2x + 8$		

2. Solve the following equations:

a) $x^3 - 2x^2 - 11x + 12 = 0$	b) $ 3x - 2 - 5 = 0$	c) $\sqrt{x^2 + 5} = 3x - 1$
d) $\sqrt{x + 4} + \sqrt{x - 1} = 3$	e) $x^4 - 5x^2 + 4 = 0$	f) $ 2x^2 - 7 = 10$
g) $\frac{\sqrt{x}}{2} - \frac{3}{4} = \frac{x - 1}{2}$	h) $\sqrt{\frac{x}{2}} + \sqrt{\frac{x + 1}{3}} = 2$	

3. Sketch the following sets of reals:

- (a) The set A represented by the union of intervals $(-1, 2)$ and $[4, 6]$,
- (b) the set B represented by the intersection of intervals $[-3, 1]$ and $(-2, 5)$,
- (c) the set C represented by the union of intervals $(-3, 2)$ and $(4, \infty)$,
- (d) the set D represented by the intersection of intervals $(-\infty, -1)$ and $(0, 5]$,
- (e) the set E represented by the union of the interval $[1, 4]$ and the set of rational numbers in the open interval $(4, 6)$.

4. Find all $x \in \mathbb{R}$ satisfying the following inequalities:

a) $(x - 3)(2x + 5) > 0$	d) $\frac{x - 2}{x + 3} < 0$
b) $3x^2 - 4x < 5x - 2$	e) $\sqrt{2x - 1} > 3$
c) $-2x + 1 > 3$ $5x - 7 < 2x + 4$	f) $\frac{x^2 - 9}{x - 3} \leq 0$