

## Equations and Inequalities

### I. Solve the following equations.

1.  $x^2 - 3x - 8 = 0$

2.  $x^3 + 5x^2 - 7x - 4 = 0$

3.  $-2x^4 + 3x^3 + 7x^2 - 8x - 3 = 0$

### II. Solve the following inequalities.

1.  $|5x - 3| > 9$

2.  $|3x + 4| \leq 12$

3.  $|7 - 6x| \geq 20$

4.  $|-5 + 8x| < 7$

5.  $x^2 - 9x + 8 \leq 0$

6.  $x^2 + 7x - 10 > 0$

7.  $x^3 - 6x^2 + 3x + 10 \leq 0$

8.  $x^3 + 5x^2 - 11x - 24 \geq 0$

9.  $\frac{3x - 5}{x + 4} < 2$

10.  $\frac{3 - 6x}{x + 9} \geq 1$

## Answers

### I. Solve the following equations.

1.  $x^2 - 3x - 8 = 0$

$x = -1.702 \quad x = 4.702$

2.  $x^3 + 5x^2 - 7x - 4 = 0$

$x = -6.048 \quad x = -.443 \quad x = 1.491$

3.  $-2x^4 + 3x^3 + 7x^2 - 8x - 3 = 0$

$x = -1.681 \quad x = -.306 \quad x = 1.391 \quad x = 2.097$

### I. Solve the following inequalities.

1.  $|5x - 3| > 9$

$x > \frac{12}{5} \quad x < -\frac{6}{5}$

2.  $|3x + 4| \leq 12$

$-\frac{16}{3} \leq x \leq \frac{8}{3}$

3.  $|7 - 6x| \geq 20$

$x \leq -\frac{13}{6} \quad x \geq \frac{9}{2}$

4.  $|-5 + 8x| < 7$

$-\frac{1}{4} < x < \frac{3}{2}$

5.  $x^2 - 9x + 8 \leq 0$

$1 \leq x \leq 8$

6.  $x^2 + 7x - 10 > 0$

$x < -8.217 \quad x > 1.217$

7.  $x^3 - 6x^2 + 3x + 10 \leq 0$

$x \leq -1 \quad 2 \leq x \leq 5$

8.  $x^3 + 5x^2 - 11x - 24 \geq 0$

$-6.154 \leq x \leq -1.481 \quad x \geq 2.634$

9.  $\frac{3x - 5}{x + 4} < 2$

$-4 < x < 13$

10.  $\frac{3 - 6x}{x + 9} \geq 1$

$-9 < x \leq -\frac{6}{7}$