

Worksheet 0 - Basic Algebra

(1) Simplify each expression. Write your answer without negative exponents.

(a) $\sqrt{200} - \sqrt{32}$

(b) $\left(\frac{3x^{3/2}y^3}{x^2y^{-1/2}}\right)^{-2}$

(2) Factor each expression.

(a) $4x^2 - 25$

(b) $x^3 - 3x^2 - 4x + 12$

(c) $3x^{3/2} - 9x^{1/2} + 6x^{-1/2}$

(3) Simplify the rational expression.

(a) $\frac{x^2 + 3x + 2}{x^2 - x - 2}$

(b) $\frac{x^2}{x^2 - 4} - \frac{x + 1}{x + 2}$

(4) Solve the equation. (Find only the real solutions.)

(a) $x^2 - x - 12 = 0$

(b) $x^4 - 3x^2 + 2 = 0$

(c) $3|x - 4| = 10$

(d) $\frac{2x}{x+1} = \frac{2x-1}{x}$

(e) $2x(4 - x)^{-1/2} - 3\sqrt{4 - x} = 0$

(5) Solve each inequality. Write your answer using interval notation.

(a) $-4 < 5 - 3x \leq 17$

(b) $x^2 < 2x + 8$

(c) $x(x - 1)(x + 2) > 0$

(d) $|x - 4| < 3$

(d) $\frac{2x-3}{x+1} \leq 1$

(6) State whether each equation is true or false.

(a) $(a + b)^2 = a^2 + b^2$

(b) $\sqrt{a + b} = \sqrt{a} + \sqrt{b}$

(c) $\frac{1 + TC}{C} = 1 + T$

(d) $\frac{1}{x - y} = \frac{1}{x} - \frac{1}{y}$