

Worksheet 1

Sections 1.1, 1.2, 1.3

Section 1.1

Problem 1. Let $A = \{x|x \geq -2\}$, $B = \{x|x < 4\}$, and $C = \{x|-1 < x \leq 5\}$. Find

- (a) $B \cup C$, (b) $B \cap C$, (c) $A \cap C$, (d) $A \cap (B \cup C)$.

Problem 2. Graph the following sets on a number line.

- (a) $(-2, 0) \cup (-1, 1)$, (b) $[-4, 6] \cap [0, 8)$, (c) $(-\infty, 6] \cap (2, 10)$.

Problem 3. How do we express the quantity $|a - b|$ without using absolute value if $a < b$?

Section 1.2

Problem 4. Simplify the expression $\sqrt{81x^3 + 81x^2y^3}$.

Problem 5. Simplify the expression below and eliminate any negative exponent(s). Assume that all letters denote positive numbers.

$$\left(\frac{x^{3/2}}{y^{-1/2}}\right)^4 \left(\frac{x^{-2}}{y^3}\right)$$

Section 1.3

Problem 6. Factor the following expressions completely.

(a) $x^2(x^2 - 1) - 9(x^2 - 1)$, (b) $9x^3 + 18x^2 - x - 2$, (c) $\frac{1}{2}x^{-1/2}(3x + 4)^{1/2} - \frac{3}{2}x^{1/2}(3x + 4)^{-1/2}$.