

BLC 190

Name: _____

Worksheet 1

1. Solve the following equations:

(a) $5\sqrt{y} - 2 = 3\sqrt{y} + 4$

(b) $\frac{5}{2t} + \frac{3}{t} = 4$

(c) $x^3 - x^2 - 6x = 0$

(d) $2(3x - 5) - 3(x - 2) = 5$

(e) $3 = \frac{4x}{2x + 1}$

(f) $4x = (x + 1)^2$

2. Recall that the quadratic formula is:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Use the quadratic formula to solve the following equations.

(a) $2x^2 + 3x - 5 = 0$

(b) $4x^2 = 3x + 5$

3. Solve the following equations:

(a) $x^4 - 5x^2 + 6 = 0$

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

4. Solve the following equation for y :

$$3x + 5xy = 3y + 4$$

5. Solve the following equation for y :

$$x = \frac{7}{3y - 5}$$

6. Solve the following equations:

(a) $x - \frac{1}{x} = 0$

(b) $\frac{5}{x+1} - \frac{1}{x-3} = 0$

7. Simplify by combining the fractions:

(a) $\frac{3}{x} - \frac{1}{y}$

(b) $\frac{1}{x} + \frac{1}{x-3}$

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

8. Simplify the following expressions:

$$(a) \frac{x^2 - 5x + 6}{x - 2}$$

$$(b) \frac{x^2 - y^2}{x - y}$$

$$(c) \frac{x/y}{z}$$

$$(d) \frac{x}{y/z}$$

$$(e) \frac{\frac{1}{x} + \frac{1}{y}}{z}$$

$$(f) \frac{3x}{\frac{5}{y} - \frac{2}{z}}$$

9. Simplify the following expression:

$$\frac{\frac{1}{x-2} + \frac{1}{x+5}}{\frac{1}{x^2-4}}$$

10. Find all solutions to the following system of equations:

$$\begin{aligned}x - 2y &= 7 \\5x + 3y &= -4\end{aligned}$$

11. Rationalize either the top or the bottom of the following fractions:

(a) $\frac{5}{\sqrt{3}-1}$

(b) $\frac{x-\sqrt{5}}{x+3}$

(c) $\frac{x-4}{\sqrt{x}+2}$