

BLC 190

Name: _____

Homework 1

1. Solve the following equations:

(a) $(\sqrt{x} + 1)^2 = x + 7$

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

(c) $\frac{2}{x-3} + \frac{3}{x+4} = 0$

(d) $1 - \frac{1}{x+3} = \frac{6}{x+7}$

2. Solve the following equations:

(a) $x^4 - 8x^2 + 12 = 0$

(b) $x^5 - 10x^3 + 21x = 0$

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

3. Solve the following equations for y :

(a) $3x + 5x^2y = 3y - 1$

(b) $\sqrt{x+y} = 5$

(c) $x = \frac{3y+4}{2y-5}$

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

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

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

$$\begin{aligned}2x + y &= 3 \\x^2 + 2y &= 2\end{aligned}$$

6. Rationalize the denominator in each of the following expressions:

(a) $\frac{3}{\sqrt{7}-4}$

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

7. Simplify:

$$\frac{\frac{1}{x+y} - \frac{1}{x}}{y}$$

8. Rationalize the numerator of the following expression:

$$\frac{\sqrt{x+h} - \sqrt{x}}{h}$$

Simplify your answer as much as possible.