

INTERMEDIATE ALGEBRA

GPS # 10

3.1 LINEAR EQUATIONS

NAME:

Antoinette Durden

Useful Guidelines:

To solve a Linear Equation in One Variable:

- * Eliminate the fractions: Multiply both sides by the least common denominator as needed.
- * Clear parentheses and combine like terms as needed.
- * Get all terms with the variable on one side of the equation and all numbers on the other side.
- * Get an equation with just the variable on one side of the equation.

Solve the following linear equations in one variable:

1. a) $9x - 5x + 2 = 3 + 7x + 8$

$$4x + 2 = 7x + 11$$

$$2 = 3x + 11$$

$$-9 = 3x$$

$$x = -3$$

b) $10 + 2x - 1 = 27x + 8$

$$2x + 9 = 27x + 8$$

$$9 = 25x + 8$$

$$1 = 25x$$

$$x = \frac{1}{25}$$

2. a) $2y + 3(y - 5) + 9y = 2 + 7y$

$$2y + 3y - 15 + 9y = 2 + 7y$$

$$14y - 15 = 2 + 7y$$

$$7y - 15 = 2$$

$$7y = 17$$

$$y = \frac{17}{7}$$

b) $2(r + 4) + 3(r - 5) + 9 = 3r + 7$

$$2r + 8 + 3r - 15 + 9 = 3r + 7$$

$$5r + 2 = 3r + 7$$

$$2r + 2 = 7$$

$$2r = 5$$

$$r = \frac{5}{2}$$

3. a) $\left(\frac{3x+1}{4} + \frac{x-2}{2}\right) = (7) \cdot 4$

$$3x + 1 + 2x - 4 = 28$$

$$5x - 3 = 28$$

$$5x = 31$$

$$x = \frac{31}{5}$$

b) $\left(\frac{x-5}{3} - \frac{x-2}{9}\right) = (2x+1) \cdot 9$

$$3(x-5) - (x-2) = 18x + 9$$

$$3x - 15 - x + 2 = 18x + 9$$

$$2x - 13 = 18x + 9$$

$$-13 = 16x + 9$$

$$-22 = 16x$$

$$x = \frac{-22}{16}$$

$$x = -\frac{11}{8}$$

4. a) $(.03k + .02(k-5)) = (.01k) \cdot 100$

$$3k + 2(k-5) = k$$

$$3k + 2k - 10 = k$$

$$5k - 10 = k$$

$$5k = k + 10$$

$$4k = 10$$

$$k = \frac{10}{4}$$

$$k = \frac{5}{2}$$

b) $(.15k + .09(k+200)) = (.10k+3) \cdot 100$

$$15k + 9(k+200) = 10k + 300$$

$$15k + 9k + 1800 = 10k + 300$$

$$24k + 1800 = 10k + 300$$

$$14k + 1800 = 300$$

$$14k = -1500$$

$$k = -\frac{750}{7}$$