

# Algebra Workshop

Name: \_\_\_\_\_

## Worksheet 11

1. Solve the following equations:

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

(b)  $7 - x = 3$

(c)  $3x + 4 = 5x - 1$

(d)  $5(x - 2) - 3(x + 1) = -7$

(e)  $2\sqrt{x+5} + 1 = 7$

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

(g)  $2\sqrt{x} + 5 = 3\sqrt{x}$

(h)  $3x^2 - 10 = 17$

2. Solve the following equations:

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

(b)  $x^{1/3} = 4$

(c)  $x^2 - 9 = 0$

(d)  $(2x - 3)(x + 4) = 0$

(e)  $x^4 - 6 = 10$

(f)  $x^2 + 7x + 12 = 0$

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

(h)  $x^2 = 7x - 10$

3. Simplify:

(a)  $x(x^2y^3)^2$

(b)  $\sqrt[3]{x^3y^6}$

(c)  $\sqrt{\frac{x^3y^2}{xy^{-4}}}$

(d)  $\frac{x^{3/2}}{x^{1/2}}$

4. Simplify by adding the fractions:

(a)  $\frac{1}{x} + \frac{1}{y}$

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

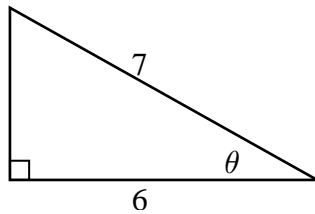
5. Women born in 1960 have a life expectancy of 73.1 years; women born in 2004 have a life expectancy of 80.4 years. For the following questions, assume that life expectancy is linearly related to year of birth.

(a) Find an equation for the life expectancy of a woman born in year  $x$ .

(b) What would you predict for the life expectancy of a woman born in 2009?

6. Susan is one year older than Mike. The product of their ages is 42. How old is Mike?

7. Consider the following right triangle:



(a) What is  $\sin \theta$ ?

(b) What is  $\cos \theta$ ?

(c) What is  $\tan \theta$ ?