Homework 10

Radicals, Simplifying Radicals, and Radical Equations

Name: _____

Show all work clearly. Simplify radicals completely and check all solutions to radical equations.

Part I: Solve Radical Equations

Solve each equation.

1.

$$\sqrt{2x-5} = 7$$

2.

$$\sqrt{3x-1} = -2$$

3.

$$\sqrt{2x-5} - 2 = 3$$

4.

$$\sqrt{x+4}+1=6$$

5.

$$\sqrt{5x-9}=x-1$$

Part II: Simplify Radicals

Simplify completely.

(a)

$$\sqrt{6a^{10}b}$$

(b)

$$\sqrt{12a^4b^{49}}$$

(c)

$$\sqrt{72x^5}$$

(d)

$$\sqrt{98m^3n^5}$$

(e)

$$8\sqrt{5} - \sqrt{45} - \sqrt{80}$$

(f)

$$3\sqrt{8x} - 7\sqrt{18x}$$

Part III: Operations with Radicals

Perform the indicated operations and simplify completely.

i. $$(2\sqrt{3})(5\sqrt{6})$$

ii. $$(\sqrt{5}+2)(\sqrt{5}-2)$$

iii. $$\frac{\sqrt{48}}{\sqrt{3}}$$

iv. $$\frac{5}{\sqrt{2}}$$

Rationalize the denominator.

v.

$$\frac{3}{2\sqrt{5}}$$

Rationalize the denominator.

Part IV: Applications

i. The length of the diagonal of a square is represented by

$$\sqrt{200} \text{ inches.}$$

Simplify the radical to determine the exact length.

ii. A scientist measures a quantity represented by

$$4\sqrt{18} - 2\sqrt{8}.$$

Simplify the expression.