PRE-CALCULUS 11 ABSOLUTE VALUE & RADICALS ADDING & SUBTRACTING RADICALS PART 2

A. Definitions

- 1. radical: a mathematical symbol representing a root.
- 2. like radicals: terms with the same index and the same radicand.



B. Adding & Subtracting Radicals

1. Simplify the following expressions.

a)
$$3\sqrt{18} - 2\sqrt{50}$$

 $3\sqrt{6} \cdot \sqrt{2} - 2\sqrt{25} \cdot \sqrt{2}$
 $9\sqrt{2} - 10\sqrt{2}$
 $= -\sqrt{2}$

b)
$$2\sqrt{75} - \sqrt{81} + \sqrt{27} + 3\sqrt{4}$$

$$2\sqrt{55} \cdot \sqrt{3} - \sqrt{80} + \sqrt{9} \cdot \sqrt{3} + 3\sqrt{9}$$

$$= -3 + 13\sqrt{3}$$

c)
$$\sqrt[3]{16} - 2\sqrt[3]{81} + 5\sqrt[3]{2} - \sqrt[3]{24}$$

$$\sqrt[3]{2} - \sqrt[3]{3} + 5\sqrt[3]{2} - \sqrt[3]{3} + 5\sqrt[3]{2} - \sqrt[3]{3}$$

$$- \sqrt[3]{3} + 7\sqrt[3]{2} + 7\sqrt[3]{2}$$

$$= -8\sqrt[3]{3} + 7\sqrt[3]{2}$$

d)
$$5\sqrt{x} + 3\sqrt{x} - 4\sqrt{x}$$
 , $x \ge 0$

e)
$$\sqrt[3]{24y} - \sqrt[3]{3y} + \sqrt[3]{81y}$$
, $y \in R$

$$\sqrt[3]{8} \cdot \sqrt[3]{3y} - \sqrt[3]{3y} + \sqrt[3]{3y}$$

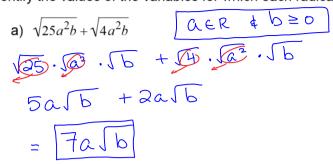
$$\sqrt[3]{3y} - \sqrt[3]{3y} + \sqrt[3]{3y}$$

$$= \boxed{4} \sqrt[3]{3y}$$

i)
$$\sqrt[4]{81m^3n^5} - \sqrt[4]{16m^3n^5}$$
, $m \& n \ge 0$
 $\sqrt[4]{80} \cdot \sqrt[4]{m^3} - \sqrt[4]{m^3} - \sqrt[4]{m^3} - \sqrt[4]{m^3}$

$$=$$
 $\int_{0}^{4} \sqrt{m^3 n}$

2. Identify the values of the variables for which each radical is defined, then simplify.



b)
$$4\sqrt[3]{16x^3y^4} + 2y\sqrt[3]{54x^3y}$$
 $4\sqrt[3]{8} \cdot \sqrt[3]{3} \cdot \sqrt[3]$

Assignment: Pg. 114 #4, 5, 7, 8