# PRE-CALCULUS 11 RADICALS SIMPLIFYING RADICALS PART 2

## A. Definitions

- 1. **radical:** a mathematical symbol representing a root. Ex.  $3\sqrt{3}$ ,  $\sqrt[3]{10}$ ,  $2\sqrt[4]{18}$ ,  $-5\sqrt[5]{45}$
- 2. **perfect root:** a root that can be completely simplified. Ex.  $\sqrt{25}$ ,  $\sqrt[3]{-8}$ ,  $\sqrt[4]{81}$

## B. Comparing Radicals

Arrange the following in order from least to greatest.

a) 
$$9\sqrt{2}$$
,  $3\sqrt{6}$ ,  $8\sqrt{3}$   
 $\sqrt{9^2 \cdot 2}$   $\sqrt{3^2 \cdot 6}$   $\sqrt{8^2 \cdot 3}$   
 $\sqrt{162}$   $\sqrt{34}$   $\sqrt{192}$ 

b) 
$$7\sqrt[3]{2}$$
,  $6\sqrt[4]{5}$ ,  $4\sqrt[5]{5}$ ,  $8.972$ ,  $8.944$ 

#### C. Simplifying Radicals with Variables

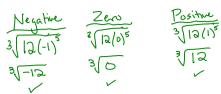
1. For which values of the variable is each radical defined?

a) 
$$\sqrt{54x^3}$$

Negative Zero Positive

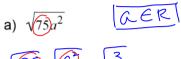
 $\sqrt{54(-1)^3}$   $\sqrt{54(0)^3}$   $\sqrt{54(1)^3}$ 
 $\sqrt{-54}$   $\sqrt{0}$   $\sqrt{54}$ 

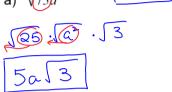




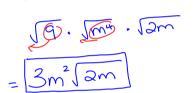


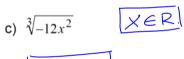
2. Simplify the following radicals if possible.

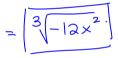


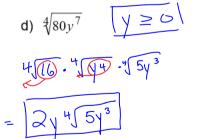














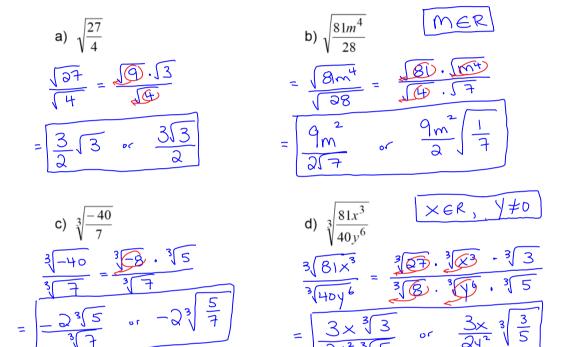




### D. Division Property of Radicals

$$\eta \sqrt{\frac{a}{b}} = \frac{\eta \sqrt{a}}{\eta \sqrt{b}}, \text{ where } a \& b \in R, b \neq 0$$
Undefine d.

1. Write the following as a mixed radical.



2. Write the following as an entire radical.

a) 
$$\bigcirc 3\sqrt{\frac{2}{3}}$$

$$-\sqrt{3^2 \cdot \frac{2}{3}}$$

$$-\sqrt{5}$$

Assignment: Pg. 100 #3 - 11