Math 2200 **Unit 5: Radicals Worksheet** Name: _____

1. Write the simplified radical form of each of the following:

a) $\sqrt{108}$ b) $12\sqrt{24}$ c) $\sqrt[3]{480}$ d) $\frac{2}{3}\sqrt{63}$

2. Write each as an entire radical:

a) $24\sqrt{6}$ b) $-3\sqrt{6}$ c) $9\sqrt[3]{7}$ d) $5\sqrt[4]{3}$

3. Simplify:

a) $5\sqrt{7}-2\sqrt{7}$ b) $4\sqrt{5}-11\sqrt{5}+3\sqrt{5}$ c) $4\sqrt{5}-2\sqrt{75}+3\sqrt{25}$

4. Multiply and simplify:

a) $5\sqrt{10}\times 4\sqrt{6}$ b) $\sqrt{3}(\sqrt{11}+\sqrt{2})$ c) $\sqrt{8}(\sqrt{12}-\sqrt{18})$

e) $3\sqrt{2}(2\sqrt{2}-5\sqrt{8})$ f) $\left(3-2\sqrt{5}\right)^2$

5. Divide. Simplify where possible.

a) $\frac{12\sqrt{6}}{3\sqrt{2}}$ b) $-\frac{5\sqrt{21}}{10\sqrt{3}}$ c) $\frac{4\sqrt{27}}{\sqrt{3}}$

6. Identify the conjugates of the following:

a) $4-3\sqrt{5}$ b) $3\sqrt{2}+7$ c) $-5\sqrt{8}+3\sqrt{5}$

7. Rationalize the following:

a) $\frac{\sqrt{3}}{\sqrt{5}-\sqrt{2}}$ b) $\frac{\sqrt{7}+3\sqrt{2}}{9+2\sqrt{14}}$ c) $\frac{2}{\sqrt{2}+1}+\frac{1}{\sqrt{3}+1}$

8. State the restrictions.

a) $\sqrt{x-5}$ b) $\sqrt{x^5y^8}$ c) $\frac{3}{\sqrt{x+2}}$

9. Simplify and state the restrictions.

a) $\sqrt{125m^3}$ b) $\sqrt{100x^3y^6}$ c) $-5\sqrt{80x^4y^7}$

10. Multiply and write in simplified radical form.

a) $-3\sqrt{7r^3}\cdot 6\sqrt{7r^2}$ b) $\sqrt{6n}(7n^3+\sqrt{12})$ c) $(5\sqrt{2x}+\sqrt{5})(-4\sqrt{2x}+\sqrt{5x})$

11. Divide.

a) $\frac{\sqrt{3x^2y^3}}{4\sqrt{5xy^3}}$ b) $\frac{3-3\sqrt{3a}}{4\sqrt{8a}}$ c) $\frac{3n^2}{\sqrt{10n}-4}$

d) $\frac{4x^2-3\sqrt{3x}}{5-3\sqrt{3x^2}}$