**10.4 Dividing Radical Expressions** **Math 51 Professor Busken**

**Objectives**

- Divide and simplify Radical Expressions
- Rationalize denominators or numerators that have one term

**Exercises**

1. **Simplify by taking roots of the numerator and denominator. Assume all variables represent positive numbers.**

a) $\sqrt{\frac{49}{100}}$ b) $\sqrt{\frac{12x^5}{49x}}$ c) $\sqrt[3]{\frac{27x^4y^6}{8x}}$ d) $\sqrt[4]{\frac{32x^4}{2y^4z^8}}$

2. **Divide and simplify, if possible. Assume all variables represent positive real numbers.**

a) $\frac{\sqrt{50x}}{\sqrt{2x}}$ b) $\frac{\sqrt{48x}}{\sqrt{3x}}$ c) $\frac{\sqrt{56xy^3}}{\sqrt{7x}}$

d) $\frac{\sqrt[3]{189x^5y^7}}{\sqrt[3]{7x^2y^2}}$ e) $\frac{\sqrt[3]{x}}{\sqrt[4]{x}}$ f) $\frac{\sqrt[5]{x^2y^4}}{\sqrt[8]{xy^3}}$

3. **Rationalize each denominator. Assume all variables represent positive numbers.**

a) $\sqrt{\frac{2}{7}}$ b) $\frac{3\sqrt{6}}{4\sqrt{2}}$ c) $\frac{\sqrt{5x}}{\sqrt{10y}}$ d) $\frac{\sqrt[3]{3}}{\sqrt[3]{5}}$ e) $\frac{\sqrt[3]{2x^2}}{\sqrt[3]{9y^2}}$

4. **Rationalize each numerator. Assume all variables represent positive numbers.**

a) $\sqrt{\frac{5}{3}}$ b) $\frac{3\sqrt{5}}{5\sqrt{2}}$ c) $\sqrt[3]{\frac{7}{8}}$ d) $\frac{\sqrt{4x}}{7}$ e) $\frac{\sqrt[3]{4x}}{\sqrt[3]{z^4}}$

***Answers:*** 1a) $7/10$ 1b) $\frac{2x^2\sqrt{3}}{7}$ 1c) $\frac{3xy^2}{2}$ 1d) $\frac{2x}{yz^2}$ 2a) 5 2b) 4 2c) $2y\sqrt{2y}$
2d) $3xy\sqrt[3]{y^2}$ 2e) $\sqrt[12]{x}$ 2f) $\frac{\sqrt[3]{10x^2y^2}}{2y}$ 3a) $\frac{\sqrt{14}}{7}$ 3b) $\frac{3\sqrt{3}}{4}$ 3c) $\frac{\sqrt{2xy}}{2y}$ 3d) $\frac{\sqrt[3]{75}}{5}$
3e) $\frac{\sqrt[3]{6x^2y}}{3y}$ 4a) $\frac{5}{\sqrt{15}}$ 4b) $\frac{3}{\sqrt{10}}$ 4c) $\frac{7}{2\sqrt[3]{49}}$ 4d) $\frac{2x}{7\sqrt{x}}$ 4e) $\frac{2x}{z\sqrt[3]{2x^2z}}$