

## Section 2.3 and 2.4 – Final Exam Prep

Answer the following three questions, show as many steps as you need to, write clearly and neatly.

1. Perform the following operations

$$\sqrt{48} + \sqrt{8} - \sqrt{27} - \sqrt{32}$$

$$\sqrt{16 \cdot 3} + \sqrt{4 \cdot 2} - \sqrt{9 \cdot 3} - \sqrt{16 \cdot 2}$$

$$4\sqrt{3} + 2\sqrt{2} - 3\sqrt{3} - 4\sqrt{2}$$

$$\boxed{\sqrt{3} - 2\sqrt{2}}$$

2. Perform the following operations

$$\frac{2}{3}\sqrt{12} - \frac{5}{2}\sqrt{48} + \frac{1}{4}\sqrt{108}$$

$$\frac{8}{12}\sqrt{4 \cdot 3} - \frac{30}{12}\sqrt{16 \cdot 3} + \frac{3}{12}\sqrt{36 \cdot 3}$$

$$\frac{16}{12}\sqrt{3} - \frac{120}{12}\sqrt{3} + \frac{18}{12}\sqrt{3}$$

$$\frac{16\sqrt{3} - 120\sqrt{3} + 18\sqrt{3}}{12}$$

$$\frac{-86\sqrt{3}}{12}$$

$$\boxed{\frac{-43\sqrt{3}}{6}}$$

3. Perform the following operations

$$(3\sqrt{x} + \sqrt{y})(3\sqrt{x} - \sqrt{y})$$

$$\boxed{9x - y}$$

4. Perform the following operations

$$\sqrt{2x}(\sqrt{2} - \sqrt{x})$$

$$\sqrt{4x} - \sqrt{2x^2}$$

$$\boxed{2\sqrt{x} - x\sqrt{2}}$$

5. Rationalize the Denominator

$$\frac{5}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}}$$

$$\boxed{\frac{5\sqrt[3]{4}}{2}}$$

6. Rationalize the Denominator

$$\frac{\sqrt{y}}{\sqrt{x} + \sqrt{y}} \cdot \frac{\sqrt{x} - \sqrt{y}}{\sqrt{x} - \sqrt{y}}$$

$$\boxed{\frac{\sqrt{xy} - y}{x - y}}$$