

**Section 5.2 Extra Practice**

1. Multiply. Express each answer as a mixed radical in simplest form.

a)  $(6\sqrt{5})(2\sqrt{3})$

b)  $\left(\frac{1}{3}\sqrt{45}\right)(\sqrt{10})$

c)  $(3\sqrt{28})\left(\frac{1}{4}\sqrt{14}\right)$

d)  $(\sqrt{27x^5})(\sqrt{3x^7})$

2. Simplify each expression. For part d), identify the values of the variable that make the radical expression a real number.

a)  $\sqrt{10}(2\sqrt{10} + \sqrt{5})$

b)  $\sqrt{15}(3\sqrt{5} - \sqrt{3})$

c)  $2\sqrt{2}(1 + \sqrt{2})$

d)  $3\sqrt{x}(2\sqrt{x} - \sqrt{2})$

3. Multiply using the distributive property. Simplify each expression.

a)  $(1 + \sqrt{3})(3 + \sqrt{3})$

b)  $(3 + 4\sqrt{7})(5\sqrt{7} + 2)$

c)  $(1 + 5\sqrt{2})(1 - 5\sqrt{2})$

d)  $(4\sqrt{3} + 3\sqrt{5})^2$

4. Multiply and simplify each expression. State any restrictions on the values for the variables.

a)  $(\sqrt{x} + 1)(\sqrt{x} - 3)$

b)  $(x - \sqrt{5})(x + \sqrt{5})$

c)  $(2\sqrt{x} - 1)(\sqrt{x} + 2)$

d)  $(2\sqrt{x} + 1)^2$

5. Divide. Express each answer in simplest form.

a)  $\frac{\sqrt{20}}{\sqrt{5}}$

b)  $\frac{\sqrt{90}}{\sqrt{15}}$

c)  $\frac{\sqrt{45x^3}}{\sqrt{5x^7}}, x > 0$

d)  $\frac{x\sqrt{18x^3}}{4\sqrt{6x}}, x > 0$

6. Rationalize each denominator. Express each radical in simplest form.

a)  $\frac{\sqrt{10}}{\sqrt{3}}$

b)  $\frac{8\sqrt{15}}{5\sqrt{2}}$

c)  $\frac{25}{\sqrt{75}}$

d)  $\frac{5\sqrt{21}}{7\sqrt{70}}$

7. Rationalize each denominator. Simplify.

a)  $\frac{\sqrt{3} - 1}{\sqrt{3}}$

b)  $\frac{6\sqrt{2} + 2\sqrt{6}}{3\sqrt{6}}$

c)  $\frac{\sqrt{18x} - \sqrt{8x}}{\sqrt{x}}, x > 0$

d)  $\frac{2\sqrt{x} + \sqrt{8}}{\sqrt{2x}}, x > 0$

8. Rationalize each denominator. Simplify.

a)  $\frac{4}{\sqrt{3} + 1}$

b)  $\frac{\sqrt{5}}{\sqrt{5} - 5}$

c)  $\frac{\sqrt{15}}{\sqrt{2} - \sqrt{3}}$

d)  $\frac{2\sqrt{2} - \sqrt{6}}{2\sqrt{6} - \sqrt{5}}$

