

## Radicals Review

Name: \_\_\_\_\_

Show *all* work to receive full marks.

1. Change to a mixed radical

a)  $\sqrt{27}$

b)  $\sqrt{54x^5y^5}$

c)  $2\sqrt{147}$

d)  $4\sqrt[3]{32}$

2. Change to an entire radical

a)  $4\sqrt{10}$

b)  $4x^3\sqrt{5}$

c)  $2x^3\sqrt{3x}$

3. Simplify

a)  $\sqrt{6} \times \sqrt{8}$

b)  $5\sqrt{20xy} \times 2\sqrt{5x}$

c)  $-8\sqrt{3} \times 5\sqrt{6}$

d)  $2\sqrt{24} \times -3\sqrt{18}$

e)  $2\sqrt{6} \times 7\sqrt{8} \times 5\sqrt{2}$

4. Simplify, leave no radicals in the denominator.

a)  $\frac{\sqrt{56}}{\sqrt{8}}$

b)  $\frac{\sqrt{48}}{\sqrt{6}}$

c)  $\frac{3\sqrt{20}}{4\sqrt{12}}$

d)  $\frac{3\sqrt{60}}{2\sqrt{27}}$

5. Add/Subtract

a)  $5\sqrt{2} - 16\sqrt{2} + 29\sqrt{2}$

b)  $\sqrt{20} - \sqrt{45}$

c)  $\sqrt{80} + \sqrt{45} - \sqrt{125}$

d)  $5\sqrt{28} - 3\sqrt{63} + 2\sqrt{112}$

e)  $2\sqrt[3]{24} + 3\sqrt[3]{81}$

6. Expand

a)  $\sqrt{5}(\sqrt{11}-\sqrt{3})$

b)  $3\sqrt{3}(\sqrt{3}-2\sqrt{6})$

c)  $(\sqrt{7}-3)(4\sqrt{7}+1)$

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

7. Rationalize the denominator.

a)  $\frac{5}{\sqrt{7}+\sqrt{3}}$

b)  $\frac{3\sqrt{3}+1}{\sqrt{2}+3}$

c)  $\frac{5\sqrt{3}-3\sqrt{5}}{\sqrt{5}-\sqrt{3}}$

8. Solve the radical expression.

a)  $-8+\sqrt{5a-5}=-3$

b)  $\sqrt{7c-54}-c=-6$

$$\text{c) } \sqrt{3x+1} = \sqrt{x+5}$$

$$\text{d) } \sqrt{c+7} + 1 = 5 - \sqrt{2c-3}$$