

## Unit 5 Final Review – Radical Functions

1. Simplify by writing as a mixed radical.

a)  $\sqrt{32r^3}$

b)  $5\sqrt[3]{81x^6y^6}$

c)  $8\sqrt{72x^5y^{12}}$

2. Write  $\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{5}}$  as a single fraction. Circle the correct answer.

**A**  $\frac{5\sqrt{2}+2\sqrt{5}}{10}$

**B**  $\frac{5\sqrt{2}-2\sqrt{5}}{10}$

**C**  $\sqrt{2} - \sqrt{5}$

**D**  $\frac{1}{\sqrt{7}}$

**E**  $\frac{1}{\sqrt{10}}$

3. Simplify.

a)  $2\sqrt{12} - \sqrt{27}$

b)  $-\sqrt{18} - 3\sqrt{8}$

c)  $3\sqrt{45} - \sqrt{5} + 2\sqrt{45}$

d)  $-\sqrt{5} + 3\sqrt{12} - 2\sqrt{20}$

e)  $3\sqrt{24} - \sqrt{2} - 3\sqrt{2}$

f)  $3\sqrt{5}(2\sqrt{5} - 4\sqrt{10})$

g)  $-4\sqrt{15}(\sqrt{6} + 2\sqrt{10})$

h)  $(2 + \sqrt{5})(3 - \sqrt{5})$

h)  $(\sqrt{12} + 6)(\sqrt{3} + 2)$

4. Rationalize the denominator.

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

b)  $\frac{7\sqrt{2}}{3\sqrt{5}}$

c)  $\frac{5\sqrt{3}}{2\sqrt{7}}$

d)  $\frac{3}{2-\sqrt{3}}$

e)  $\frac{\sqrt{3}}{4\sqrt{3}+\sqrt{2}}$

f)  $\frac{\sqrt{3}+\sqrt{2}}{\sqrt{5}}$

5. Solve each equation. State restriction(s).

a)  $-8\sqrt{x} = -2$

b)  $\sqrt{5x+2} = 6$

c)  $5 = \sqrt{34-x}$

d)  $\sqrt{4-x} = \frac{1}{2}x - 2$

e)  $2x = \sqrt{4x-1}$

f)  $\sqrt{24+5x} = x$

g)  $10 + \sqrt{20-2x} = x$

6. Match each graph with the given radical functions.

**A**  $y = -\sqrt{x+4}$

**B**  $y = 2\sqrt{x} - 3$

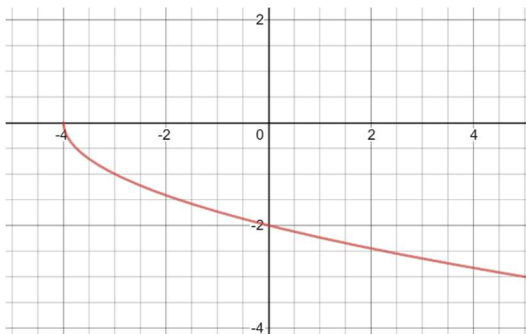
**C**  $y = -\sqrt{x-4}$

**D**  $y = -2\sqrt{x} + 4$

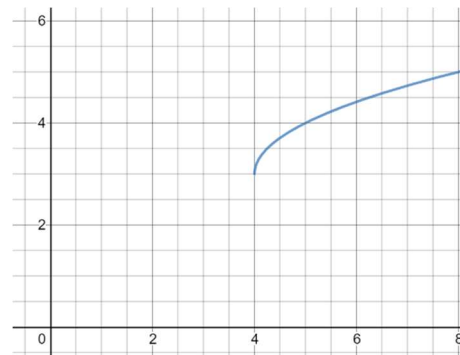
**E**  $y = \sqrt{x-4} + 3$

**F**  $y = 2\sqrt{x-3}$

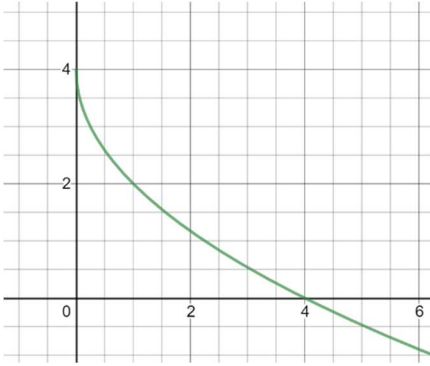
(I)



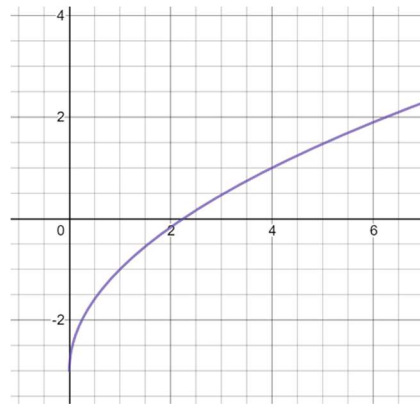
(II)



(III)



(IV)



7. State the domain and range for each function in #6.

8. List the transformations for each function in #6.