

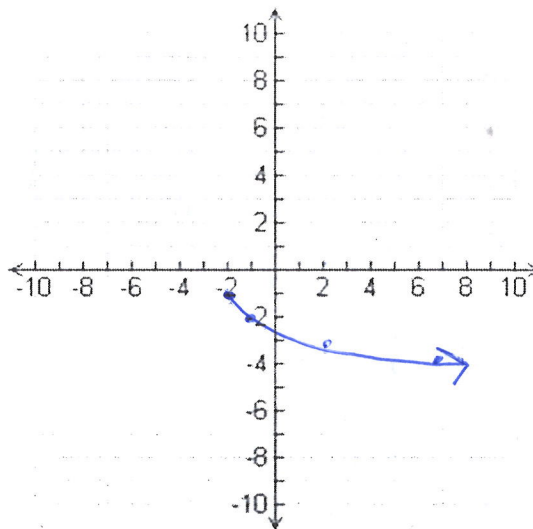
Name: Key
Chapter 10 Review

Period: _____
Algebra I

10.1 - Square Root Functions

Graph $h(x) = -\sqrt{x+2} - 1$ and compare to the parent graph.

x	$h(x)$
$x+2=0$ -2	-1
$x+2=1$ -1	-2
$x+2=4$ 2	-3
$x+2=9$ 7	-4



Domain: $x \geq -2$

Range: $y \leq -1$

Description: Reflected over x-axis.
Left 2 units
down 1 unit.

10.2 - Simplify Radical Expressions

1. $\sqrt{80}$ $\frac{\sqrt{16} \sqrt{5}}{\sqrt{4} \sqrt{5}}$

2. $\sqrt{54}$ $\frac{\sqrt{9} \sqrt{6}}{\sqrt{3} \sqrt{6}}$

3. $\sqrt{32}$ $\frac{\sqrt{16} \sqrt{2}}{\sqrt{4} \sqrt{2}}$

4. $\sqrt{5} \cdot \sqrt{10}$
 $\sqrt{50} = \frac{\sqrt{25} \sqrt{2}}{\sqrt{5} \sqrt{2}}$

5. $\sqrt{6} \cdot \sqrt{8}$
 $\sqrt{48} = \frac{\sqrt{16} \sqrt{3}}{\sqrt{4} \sqrt{3}}$

6. $-2\sqrt{2} \cdot 4\sqrt{6}$
 $-8\sqrt{12} = \frac{-8\sqrt{4} \sqrt{3}}{-8 \cdot 2 \sqrt{3}}$
 $\frac{-16\sqrt{3}}{-16\sqrt{3}}$

7. $\sqrt{60x^4y^7}$
 $\frac{\sqrt{4} \sqrt{15} \sqrt{x^4} \sqrt{y^6} \sqrt{y}}{2x^2y^3\sqrt{15y}}$

8. $\sqrt{75qr^3}$
 $\frac{\sqrt{25} \sqrt{3} \sqrt{q} \sqrt{r^2} \sqrt{r}}{5r\sqrt{3qr}}$

9. $\sqrt{2ab^2} \cdot \sqrt{10a^5b}$
 $\sqrt{20a^6b^3} = \frac{\sqrt{4} \sqrt{5} \sqrt{a^6} \sqrt{b^2} \sqrt{b}}{2a^3b\sqrt{5b}}$

10. $\sqrt{\frac{45}{10}}$ $\frac{\sqrt{45}}{\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}}$
 $\frac{\sqrt{450}}{10} = \frac{\sqrt{225} \sqrt{2}}{10}$
 $\frac{\sqrt{5} \sqrt{2}}{\sqrt{2}} = \frac{3\sqrt{2}}{2}$

11. $\frac{\sqrt{3}}{\sqrt{8}} = \frac{\sqrt{3}}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$
 $\frac{\sqrt{6}}{2 \cdot 2}$
 $\frac{\sqrt{6}}{4}$

12. $\frac{6}{5+\sqrt{11}} \cdot \frac{5-\sqrt{11}}{5-\sqrt{11}}$
 $\frac{30-6\sqrt{11}}{25-11} = \frac{30-6\sqrt{11}}{14}$
 $\frac{15-3\sqrt{11}}{7}$

10.3 - Operations with Radical Expressions

1. $3\sqrt{6} + 2\sqrt{6} - 4\sqrt{5}$

$5\sqrt{6} - 4\sqrt{5}$

2. $3\sqrt{32} + 3\sqrt{50}$

$3\sqrt{16 \cdot 2} + 3\sqrt{25 \cdot 2}$
 $3 \cdot 4\sqrt{2} + 3 \cdot 5\sqrt{2}$
 $12\sqrt{2} + 15\sqrt{2}$

$27\sqrt{2}$

3. $8\sqrt{12} - 2\sqrt{27}$

$8\sqrt{4 \cdot 3} - 2\sqrt{9 \cdot 3}$
 $8 \cdot 2\sqrt{3} - 2 \cdot 3\sqrt{3}$
 $16\sqrt{3} - 6\sqrt{3}$

$10\sqrt{3}$

distribute

4. $5\sqrt{3}(6\sqrt{10} - 6\sqrt{3})$

$30\sqrt{30} - 30\sqrt{9}$

$30\sqrt{30} - 30 \cdot 3$

$30\sqrt{30} - 90$

FOIL

6. $(2\sqrt{11} + 3\sqrt{15})(3\sqrt{2} + 4\sqrt{3})$

$6\sqrt{22} + 8\sqrt{33} + 9\sqrt{30} + 12\sqrt{45}$
 $\begin{matrix} 12\sqrt{9 \cdot 5} \\ 12 \cdot 3\sqrt{5} \end{matrix}$

$6\sqrt{22} + 8\sqrt{33} + 9\sqrt{30} + 36\sqrt{5}$

5. $(\sqrt{6} + \sqrt{2})(\sqrt{3} - \sqrt{8})$

FOIL: $\sqrt{18} - \sqrt{48} + \sqrt{6} - \sqrt{16}$
 $\sqrt{9 \cdot 2} - \sqrt{16 \cdot 3} + \sqrt{6} - 4$

$3\sqrt{2} - 4\sqrt{3} + \sqrt{6} - 4$

10.4 Radical Equations

* make sure to check!

1. $\sqrt{x-4}^2 = 8^2$

$x-4 = 64$
 $+4 \quad +4$

$x = 68$

check

$\sqrt{68-4} = 8$
 $\sqrt{64} = 8$
 $8 = 8 \checkmark$

2. $\sqrt{x+2} - 3 = 4$

$\begin{matrix} +3 & +3 \\ \sqrt{x+2} = 7^2 \end{matrix}$

$x+2 = 49$
 $-2 \quad -2$

$x = 47$

check

$\sqrt{47+2} - 3 = 4$
 $\sqrt{49} - 3 = 4$
 $7 - 3 = 4$
 $4 = 4 \checkmark$

3. $5 + \sqrt{3x} = 6$

$\begin{matrix} -5 & -5 \\ \sqrt{3x} = 1^2 \end{matrix}$

$3x = 1$

$x = \frac{1}{3}$

check

$5 + \sqrt{3(\frac{1}{3})} = 6$
 $5 + \sqrt{1} = 6$
 $5 + 1 = 6$
 $6 = 6$

4. $\sqrt{x+4}^2 = (x-2)^2$

$x+4 = (x-2)(x-2)$

$x+4 = x^2 - 4x + 4$
 $-x-4 \quad -x-4$

$0 = x^2 - 5x$ Factor by GCF

$0 = x(x-5)$

$x=0 \quad x-5=0$

$x=0 \quad x=5$

E.S.

check

$\sqrt{0+4} = 0-2$
 $\sqrt{4} = -2$
 $2 \neq -2$
 $\sqrt{5+4} = 5-2$
 $\sqrt{9} = 3$
 $3 = 3 \checkmark$

5. $(x+1)^2 = \sqrt{x-1}^2$

$(x+1)(x+1) = x-1$

$x^2 + 2x + 1 = x-1$
 $-x+1 \quad -x+1$

$x^2 + x + 2 = 0$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

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

$x = \frac{-1 \pm \sqrt{-7}}{2}$ neg

can't factor, use quadratic formula

No real solutions.