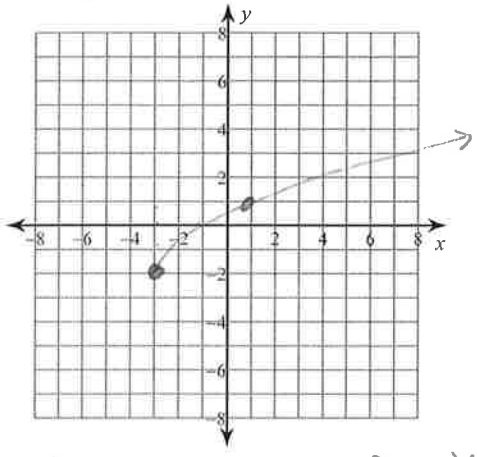
Algebra 2 Name Key

5.3-5.4 Review WS

Describe the transformation and sketch a graph of each function. State the Domain and Range.

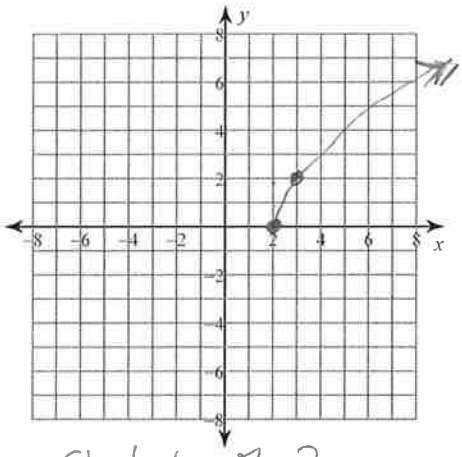
1) $y = \frac{3}{4}\sqrt{x+3} - 2$ $(-3, -2)$



Compression
left 3
down 2

D: $x \geq -3$
R: $y \geq -2$

2) $y = 2\sqrt{x-2} + 0$ $(2, 0)$



Stretch of 2
right 2

D: $x \geq 2$

R: $y \geq 0$

Describe the transformation

3) $y = \frac{1}{2}\sqrt{x-2} - 2$

Compression
right 2
down 2

4) $y = 3\sqrt{x-4} + 0$

stretch
right 4

Solve each equation. Remember to check for extraneous solutions.

5) $\left(\sqrt{-35+12v}\right)^2 = (v)^2$

$-35 + 12v = v^2$

$0 = v^2 - 12v + 35$

$0 = (v-7)(v-5)$

$v - 7 = 0 \quad v - 5 = 0$

$v = 7 \quad v = 5$

check

$\sqrt{-35+12(7)} = 7$

$7 = 7$ ✓

$\sqrt{-35+12(5)} = 5$

$5 = 5$ ✓

6) $\left(\sqrt{2b+26}\right)^2 = \left(\sqrt{-4-b}\right)^2$

$2b + 26 = -4 - b$

$-26 \quad -26 + b$

$\frac{3b}{3} = \frac{-30}{3}$

$b = -10$

$\sqrt{-10(2)+26} = \sqrt{-4+10}$

$\sqrt{-20+26} = \sqrt{6}$

$\sqrt{6} = \sqrt{6}$ ✓

7) $\left(\sqrt{3n+4}\right)^2 = \left(\sqrt{-1-2n}\right)^2$

$3n+4 = -1-2n$

$5n = -5$

$n = -1$

$\sqrt{3(-1)+4} = \sqrt{-1-2(-1)}$

$\sqrt{1} = \sqrt{1}$ ✓

8) $(x+4)^2 = \left(\sqrt{6x+15}\right)^2$

$(x+4)(x+4) = 6x+15$

$x^2+4x+4x+16 = 6x+15$

$x^2+8x+1 = 6x$

$x^2+2x+1 = 0$

$(x+1)(x+1) = 0$

$x = -1$

check

$-1+4 = \sqrt{6(-1)+15}$

$3 = \sqrt{-6+15}$

$3 = \sqrt{9}$

$3 = 3$ ✓

9) $-3+\sqrt{6a+90} = a$

$\left[\sqrt{6a+90}\right]^2 = (a+3)^2$

$(a+3)(a+3)$

$6a+90 = a^2+3a+3a+9$

$0 = a^2-81$

$0 = (a-9)(a+9)$

$a = 9$, $a = -9$ extraneous

check

$-3+\sqrt{9(6)+90} = 9$

$-3+12 = 9$

$9 = 9$ ✓

$-3+\sqrt{6(-9)+90} = 9$

$-3+\sqrt{36}$

$-3+6 \neq 9$

10) $(x-4)^2 = \left(\sqrt{2x}\right)^2$

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

$x^2-4x-4x+16 = 2x$

$x^2-10x+16 = 0$

$(x-8)(x-2) = 0$

$x = 8$, $x = 2$ extraneous

$8\overline{)16}$ $\quad 2 = -10$

check

$8-4 = \sqrt{2(8)}$

$4 = 4$ ✓

$2-4 = \sqrt{2(2)}$

$-2 \neq 2$

Solve each equation.

11) $-9+x^{\frac{3}{2}} = 116$

$+9 \quad +9$

$\left[x^{\frac{3}{2}}\right]^{\frac{2}{3}} = \left[125\right]^{\frac{2}{3}}$

$x = 25$

$-9+25^{3/2} = 116$

$-9+125 = 116$

$116 = 116$ ✓

12) $\left[125\right]^{\frac{2}{3}} = \left[(5x)^{\frac{3}{2}}\right]^{\frac{2}{3}}$

$25 = 5x$

$5 = x$

$125 = 5(5)^{2/3}$

$125 = 125$ ✓

13) $(49p)^{\frac{3}{2}} + 1 = 344$

$-1 \quad -1$

$\left[(49p)^{3/2}\right]^{2/3} = \left[343\right]^{2/3}$

$49p = 49$

$p = 1$

$49^{\frac{3}{2}} + 1 = 344$ ✓

14) $\left[5\right]^3 = \left[(29-4x)^{\frac{1}{3}}\right]^3$

$125 = 29-4x$

$-29 \quad -29$

$96 = -4x$

$-24 = x$

$5 = \left(29-4(5)\right)^{1/3}$

$5 = 5$ ✓

15) $\left(\sqrt{12-2a}\right)^2 \leq (10)^2$

$12-2a \leq 100$

$-12 \quad -12$

$\frac{-2a}{-2} \leq \frac{88}{-2}$

$a \geq -44$

$12-2a \geq 0$

$-12 \quad -12$

$\frac{-2a}{-2} \geq \frac{-12}{-2}$

$a \leq 6$

$-44 \leq a \leq 6$

16) $\sqrt{x-4}-1 \leq 5$

$+1 \quad +1$

$\left[\sqrt{x-4}\right]^2 \leq \left[6\right]^2$

$x-4 \leq 36$

$+4 \quad +4$

$x \leq 40$

$x-4 \geq 0$

$x \geq 4$

$4 \leq x \leq 40$

17) $\frac{8}{4} \leq \frac{4\sqrt{n+2}}{4}$

$(2)^2 \leq \left(\sqrt{n+2}\right)^2$

$4 \leq n+2$

$-2 \quad -2$

$2 \leq n$

$n+2 \geq 0$

$-2 \quad -2$

$n \geq -2$

$-2 \leq n \leq 2$

18) $-5+\sqrt{15-m} \geq -2$

$+5 \quad +5$

$\left(\sqrt{15-m}\right)^2 \geq \left[3\right]^2$

$15-m \geq 9$

$-15 \quad -15$

$-m \geq -6$

$m \leq 6$

$15-m \geq 0$

$-m \geq -15$

$m \leq 15$