Algebra 2 Trig Review - Station 3
Function Operations & Compositions

Let $f(x)=-x-3$, $g(x)=x^3$, and $h(x)=\frac{x}{3}$. Perform the operations for #1&2

1.

a) $g(x) \bullet h(x)$

$x^3 \cdot \frac{x}{3} = \frac{x^4}{3}$

b) $\frac{g(x)}{h(x)}$ $\frac{x^3}{\frac{x}{3}} = x^3 \cdot \frac{3}{x} = 3x^2$

2.

a) $\frac{g(x)}{f(x)}$ $\frac{x^3}{-x-3}$

b) $g(x)+h(x)$ $x^3+\frac{x}{3}$

3.
Use Compositions.

$f(x)=\frac{\sqrt[3]{x-1}}{4}+3$

$g(x)=4(x+1)^3-3$

a) f(g(x)) = $\frac{\sqrt[3]{4(x+1)^3-3-1}}{4}+3$

not an inverse

b) g(f(x)) =

4.
Use Compositions.

$f(x)=\sqrt[4]{\frac{x+2}{3}}-1$

$g(x)=3(x+1)^4-2$

yes

a) f(g(x)) = $\sqrt[4]{\frac{3(x+1)^4-2+2}{3}}-1$

$\sqrt[4]{(x+1)^4}-1 = x$

$x+1-1$

b) g(f(x)) = $3\left(\sqrt[4]{\frac{x+2}{3}}-1\right)^4+2$

$x+2-2$

Algebra 2 Trig Review - Station 4
Word Problems

1.

Pg. 417, #60,62

#60 $905=\frac{4}{3}\pi r^3$

$678.75=\pi r^3$

$(216)^{\frac{1}{3}}=(r^3)^{\frac{1}{3}}$

$6.002=r$

#62 $r=\left(\frac{P_2}{P_2}\right)^{1/n}-1$

$r=\left(\frac{2,195}{.7420}\right)^{1\left(\frac{1}{40}\right)}-1$

$r=.027$

2.

Pg. 424, ~~#84~~

no

3.

Pg. 433, #44,45

#44 $C(x)=60x+750$

$x(t)=50t$

$C(x(t))=60(50t)+750$

$3000t+750$

$C(x(5))=\$15,750$ cost to produce 250 sneakers in 5 hours

#45 a. $(85-15).9=\$63$

b. $(.9(85))-15=\$61.50$

b is better = cheaper

4.

Pg. 444, #47, 48

#47 $l=.5w+3$

(a) $\frac{l-3}{.5}=w$

(b) $\frac{6.5-3}{.5}=w$ 7

#48 (a) $\frac{9}{5}C+32=F$

(b) Start 41°F End 14°F

(c) no.

Algebra 2 Trig Review - Station 5
Evaluate the following

1.

a) $343^{\frac{1}{3}} =$ 7

b) $\left(\frac{1}{49}\right)^{\frac{-3}{2}} =$ 343

c. $(-4)^{\frac{-5}{2}} =$ NP

2.

a) $144^{\frac{-1}{2}} =$ $\frac{1}{12}$

b) $-64^{\frac{5}{6}} =$ -32

c. $-\frac{1}{225}^{\frac{-1}{2}} =$ -15

3.

a) $\left(\frac{1}{16}\right)^{\frac{-3}{2}} =$ 64

b) $\left(\frac{1}{2}\right)^{-3} =$ 8

c. $\left(\frac{1}{4}\right)^{\frac{-3}{2}} =$ 8

4.

a) $64^{\frac{-1}{2}} =$ $\frac{1}{8}$

b) $-400^{\frac{-1}{2}} =$ $\frac{-1}{20}$

c. $\left(\frac{1}{100,000}\right)^{\frac{3}{5}} =$ $\frac{1}{1000}$

Algebra 2 Trig Review - Station 6
Simplify the following

1.

a) $\frac{24^{\frac{1}{3}}}{3^{\frac{1}{3}}} = 8^{\frac{1}{3}} =$ 2

b) $\frac{1}{81^{\frac{-3}{4}}} = 81^{\frac{3}{4}} =$ 27

c) $(16x^2)^{-\frac{3}{4}} =$ $\frac{1}{8x^{\frac{3}{2}}}$

2.

a) $x^{\frac{2}{3}}x^{\frac{3}{4}} = x^{\frac{8}{12}+\frac{9}{12}} =$ $x^{\frac{17}{12}}$

b) $(2x^3)^3$ $8x^9$

c) $\left(\frac{3}{4}\right)^{-3}$ $\frac{64}{27}$

3.

a) $\frac{\sqrt[3]{216}}{\sqrt[3]{2}}$ $\sqrt[3]{\frac{216}{2}} = \sqrt[3]{108}$ $27 \cdot 4$ $3\sqrt[3]{4}$

b) $\frac{4x^{-3}y^4z^{-1}}{8x^{-5}y^{-2}z^3} =$ $\frac{x^2y^6}{2z^4}$

4.

a) $\frac{2x^{-1}y^2z}{3x^{-1}yz^{-2}} \cdot \frac{9x^4y^{-3}z^3}{8x^{-2}y^4z^{-5}} = \frac{3x^{3-1}yz^4}{4x^{-3}y^{5-7}}$ $\frac{3x^6z^{11}}{4y^6}$

b) $\left(\sqrt[4]{4} \cdot \sqrt{4}\right)^4$ $4^{\frac{1}{4}} \cdot 4^{\frac{1}{2}}$ $4^{\frac{1}{4}} \cdot 4^{\frac{2}{4}}$ $4^3 =$ 64

$\sqrt{x} = x^{\frac{1}{2}}$

Algebra 2 Trig Review - Station 7

Solve the following

1.

a) $\left(x^{\frac{2}{3}}\right)^{\frac{3}{2}} = (16)^{\frac{3}{2}} =$

$X = 64$

b) $\left((x-2)^{\frac{2}{3}}\right)^{\frac{3}{2}} = (4)^{\frac{3}{2}}$

$x-2 = 8$

$X = 10$

2. Calc

a) $\left((x-3)^{e}\right)^{\frac{1}{5}} = (60)^{(\frac{1}{5})}$

$x-3 = 2.27$

$X = 5.27$

b) $(x-3) = (\sqrt{4x})^2$

$x^2 - 6x + 9 = 4x$

$x^2 - 10x + 9 = 0$

$(x-9)(x-1) = 0$

$X = 9$

$X = 1$

3.

a) $\left(\sqrt[5]{(3x-2)}\right)^{5} = (2)^{5}$

$3x - 2 = 32$

$3x = 34$

$x = 34/3$

b) $\left((x-2)^{\frac{2}{3}}\right)^{\frac{3}{2}} = (16)^{\frac{3}{2}}$

$x - 2 = 64$

$X = 66$

4.

a) $\left(\sqrt[3]{x-16}\right)^{3} = (3)^{3}$

$x - 16 = 27$

$X = 43$

b) $\frac{1}{6}(x+9)^{3/2} = 36$

$(x+9)^{3/2} = (216)^{2/3}$

$x + 9 = 36$

$X = 27$

Algebra 2 Trig Review - Station 8

Potpourri ~ Perform the operation.

1.

a) $\sqrt[3]{2} + 2\sqrt[3]{16}$ (8.2)

$\sqrt[3]{2} + 4\sqrt[3]{2} = 5\sqrt[3]{2}$

b) $\sqrt[4]{32x^5y^{14}z^{20}}$ (16.2)

$2xy^3z^5\sqrt[4]{2xy^2}$

2.

a) $\sqrt[4]{\frac{x^7}{y^{12}}}$

$\frac{x^{\frac{7}{4}}}{y^3}$

b) $\sqrt{12x^7y^{17}}$ (4.3)

$2x^3y^8\sqrt{3xy}$

3.

a) $\sqrt[3]{128} + 2\sqrt[3]{250}$ (64.2, 125.2)

$4\sqrt[3]{2} + 10\sqrt[3]{2}$

$14\sqrt[3]{2}$

b) $\sqrt[3]{16x^7y^2} \cdot \sqrt[3]{6xy^5}$ (8.2)

$2x^2y^2\sqrt[3]{12x^2y}$

4.

a) $\left(4x^3\right)^{\frac{3}{2}}$

$8x^{\frac{9}{2}}$

b) $\left(2x^3\right)^{-3}$

$\frac{1}{8x^9}$

Station 3

#3

$$f(x) = \frac{\sqrt[3]{x-1}}{4} + 3$$

$$g(x) = 4(x+1)^3 - 3$$

$$f(g(x)) = \frac{\sqrt[3]{(4(x+1)^3 - 3) - 1}}{4} + 3$$

$$\sqrt[3]{\frac{4(x+1)^3 - 4}{4}} + 3$$

$$\sqrt[3]{(x+1)^3 - 1} + 3$$

no further reductions

Not an inverse

Compositions Station #3

#4

$f(x) = \sqrt[4]{\frac{x+2}{3}} - 1$

$g(x) = 3(x+1)^4 - 2$

$f(g(x)) = \sqrt[4]{\frac{3(x+1)^4 - 2 + 2}{3}} - 1$

$\sqrt[4]{\frac{3(x+1)^4}{3}} - 1$

$\sqrt[4]{(x+1)^4} - 1$

$x + x - 1$

x

Algebra 2 Trig Review - Station 1
Inverses – Find the Inverse

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

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

$\frac{x+4}{2} = (y+3)^{\frac{1}{3}}$

$\left(\frac{x+4}{2}\right)^3 = y+3$

$\left(\frac{x+4}{2}\right)^3 - 3 = y$

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

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

$-\frac{2}{3}(x-1) = (y-2)^4$

$\left[-\frac{2}{3}(x-1)\right]^{\frac{1}{4}} = y-2$

$\left[-\frac{2}{3}(x-1)\right]^{\frac{1}{4}} + 2 = y$

3. $y = 4\sqrt[4]{x-3} + 5$

$x - 5 = 4\sqrt[4]{y-3}$

$\frac{x-5}{4} = \sqrt[4]{y-3}$

$\left(\frac{x-5}{4}\right)^4 = y-3$

$\left(\frac{x-5}{4}\right)^4 + 3 = y$

4. $y = -\frac{1}{4}\sqrt[3]{(x+1)} - 6$

$x + 6 = -\frac{1}{4}\sqrt[3]{y+1}$

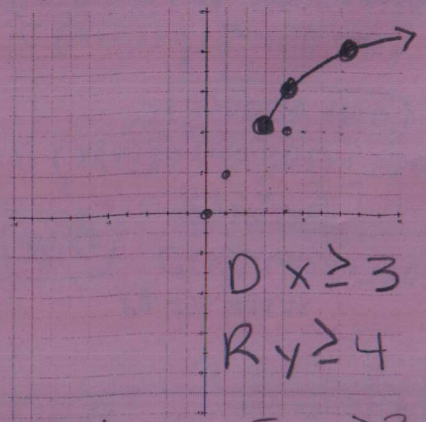
$-4(x+6) = \sqrt[3]{y+1}$

$[-4(x+6)]^3 = y+1$

$[-4(x+6)]^3 - 1 = y$

Algebra 2 Trig Review – Station 2
Graphing- Graph the following
Provide 3 points and List Domain & Range

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



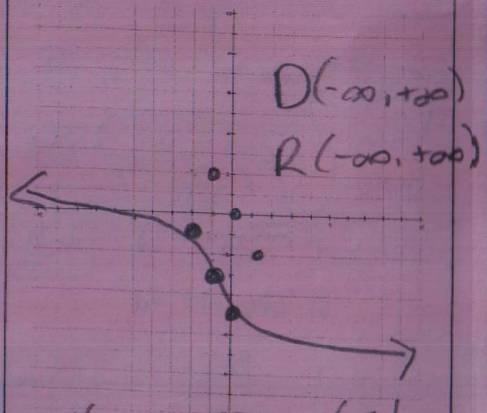
D $x \geq 3$

R $y \geq 4$

x	y
0	0
1	2
4	4

$y = 2\sqrt{x}$ → 3, ↑ 4

2. $y = -2\sqrt[3]{x+1} - 3$



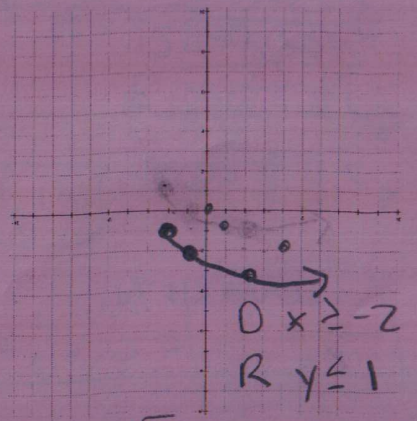
D $(-\infty, +\infty)$

R $(-\infty, +\infty)$

x	y
-1	2
0	0
1	-2

$y = -2\sqrt[3]{x}$ ← 1, ↓ 3

3. $y = -\sqrt{x+2} - 1$



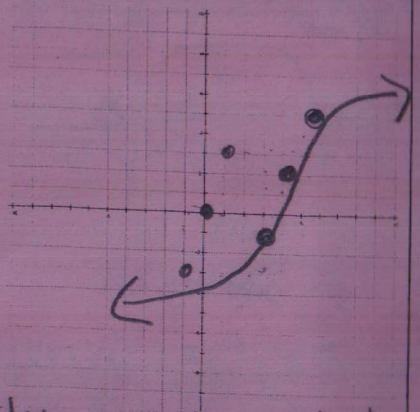
D $x \geq -2$

R $y \leq 1$

$y = -\sqrt{x}$ ← 2, ↓ 1

x	y
0	0
1	-1
4	-2

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



$y = 3\sqrt[3]{x}$ → 4, ↑ 2

x	y
-1	-3
0	0
1	3