Unit 3 Day 13
Review

Warm-up!

Graph the following functions, with at least 4 points. Find the domain and range. Then, tell how they are changed from their parent graph. (Hint: Remember that the order of transformations can be important)

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

2) $f(x) = 2\sqrt[3]{x-3} - 5$

Find the inverse

3) $y = 3x^5 + 7$

Solve

4) $\sqrt{2v-7} = v-3$

Solve

5) $y = \sqrt{2x}$

$3y - x = 4$

Warm-Up *Solutions*

Find the domain and range of the following functions. Then, tell how they are changed from their parent graph. (Hint: Remember that the order of transformations can be important)

1) $f(x) = \dfrac{4}{x+3} - 1$

Domain: $(-\infty, -3) \cup (-3, \infty)$

Range: $(-\infty, -1) \cup (-1, \infty)$

Vertical Stretch by 4, left 3, down 1

2) $f(x) = 2\sqrt[3]{x-3} - 5$

Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

Vertical Stretch by 2, right 3, down 5

3) Find the inverse

$y = 3x^5 + 7$ $\quad y = \sqrt[5]{\dfrac{x-7}{3}}$

4) Solve 4

$\sqrt{2v-7} = v-3$

5) Solve $y = \sqrt{2x}$

$3y - x = 4$

(2, 2) and (8, 4)

Homework

Review for Unit 3 Test Worksheet

*Study for Unit 3 Test!!

Whiteboard Review

Please pick up:

A whiteboard
A marker
A felt piece (for an eraser)

Simplify the radical

$$\sqrt[4]{128x^7y^7}$$

$$2xy\sqrt[4]{8x^3y^3}$$

Solve for r.

$$3646 = 1 + 5(4r + 17)^{\frac{3}{2}}$$

16

Multiply

$$x^{1/2} \cdot x^{1/5}$$

$$x^{7/10}$$

Graph, giving at least 4 exact points. Find the domain, range, and vertical and horizontal asymptotes.

$$f(x) = \frac{8}{x-2} + 1$$

$D: (-\infty, 2) \cup (2, \infty)$

$R: (-\infty, 1) \cup (1, \infty)$

$VA: x = 2$

$HA: y = 0$

Solve for p.

$$\sqrt{-10+7p} = p$$

2, 5

Simplify.

$$\left(\frac{\sqrt[3]{a^2}}{\sqrt{b}}\right)^{-6}$$

$$\frac{b^3}{a^4}$$

Find the inverse.

$y = 4x + 5$

$$y = \frac{x - 5}{4}$$

Graph, using at least 4 exact points.
Find the domain, range, and
tell how it was changed from the parent graph.

$$f(x) = \sqrt{x+4} + 2$$

$D: [-4, \infty)$

$R: [2, \infty)$

Translated left 4, up 2

Does the data show direct or inverse variation? Use this information to find the missing value.

x	0.5	-0.5	20	-1
y	10	-10	?	-5

Inverse

$$y = \frac{5}{x}, \ so \ y = \frac{1}{4}$$

Graph at least 5 exact points.
Find the domain, range, and
Tell how it was changed from the parent graph.

$$f(x) = -\sqrt[3]{x-5} - 4$$

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

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

Right 5, down 4, reflection over x-axis

Find x when y = 5, if y varies inversely as x and x = 6 when y = -18

$$y = \frac{k}{x} \qquad y = \frac{-108}{x}$$

$$-18 = \frac{k}{6} \qquad 5 = \frac{-108}{x}$$

$$k = -108 \qquad x = -21.6$$

OR use $x_1 y_1 = x_2 y_2$

In-Class Practice & Review

***Ask questions from Quiz**

***Start Homework**

Review for Unit 3 Test Worksheet

*Study for Unit 3 Test!!

Extra problems

- On next slides

Extra Review – with ANSWERS

Review (not in notes)

Find the solution to each equation algebraically.

1) $\sqrt{20x-6} = \sqrt{5x+39}$

x = 3

2) $2(x-2)^{2/3} - 8 = 192$

x = 1002

3) $(x+7)^{1/2} - x = 5$

x = -3

Extra problems – with answers!

Old Released Exam problem!!

5. The force, *F*, acting on a charged object varies inversely to the square of its distance, *r* , from another charged object. When the two objects are 0.64 meters apart, the force acting on them is 8.2 Newtons. *Approximately* how much force would the object feel if it is at a distance of 0.77 meters from another object? Round to the tenths place.

$F = \frac{k}{r^2}$ where F = force acting on a charged object,
r = distance from another charged object

$8.2 = \frac{k}{(0.64)^2}$ $k = (8.2)(0.64)^2$
$= 3.35872$

$F = \frac{3.35872}{r^2}$

$F = \frac{3.35872}{(0.77)^2}$ = Force on object at a distance 0.77 m from object

F ~ 5.7 Newtons

Extra practice - with ANSWERS!

Released Exam problems !!

6. The amount of time it takes to build a road varies inversely with the number of workers building the road. Suppose it takes 50 workers 8 months to build the road. Write an equation that could be used to determine how long it would take *n* workers to build the road. (Be sure to define the variables. How much faster would 60 workers build the road than 50 workers?

$t = \frac{k}{n}$ where t = time in months, and

n = # people working to build the road

$8 = \frac{k}{50}$

$400 = k$

$\mathbf{t = \frac{400}{n}}$

$t = \frac{400}{60}$ = 6 2/3 months for 60 workers

t = 8 months – 6 2/3 months

= **1 1/3 months faster!!**

Simplify the radical

$$\sqrt[3]{-16a^3b^8}$$

$$-2ab^2\sqrt[3]{2b^2}$$

Solve for n.

$$(n-27)^{\frac{3}{2}} = 64$$

43

Solve for x.

$$26 = -1 + (27x)^{\frac{3}{4}}$$

3

Simplify.

$$(81m^6)^{\frac{1}{2}}$$

$9m^3$

Solve for b.

$$3 = \sqrt{b-1}$$

10

Simplify.

$$3\sqrt{3y^3} - y\sqrt{27y}$$

0

Simplify.

$$\sqrt[5]{576y^5x^{12}}$$

$$2x^2y\sqrt[5]{18x^2}$$

Put the function in a form easier to graph.
Then, find the domain, range, and
Tell how it was changed from the parent graph.

$$f(x) = -\sqrt{25x - 100} + 6$$

$y = -5\sqrt{x-4} + 6$

$D: [4, \infty)$

$R: (-\infty, 6]$

Reflected over x-axis, right 4,

up 6, and stretched by 5 vertically

Is the following a direct or inverse variation? Write the equation for the variation.

X	Y
2	4
4	8
10	20
12.5	25

Direct

$y = 2x$

In kick boxing, it is found that the force, *f*, needed to break a board, varies **inversely** with the length, *l*, of the board. If it takes 5 lbs of pressure to break a board 3 feet long, how many pounds of pressure will it take to break a board that is 12 feet long? (Round to the nearest hundredth if necessary.)

$$(5,3) \text{ and } (x,12)$$

$$5(3) = 12x$$

$$x = \frac{5}{4} = 1.25$$

OR use $y = \frac{k}{x}$ method

Solve the equation. Check for any extraneous solutions.

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

$x = -125$

Solve the equation. Check for any extraneous solutions.

$$\sqrt[3]{x+4} = \sqrt[3]{3x-10}$$

$x = 7$

Solve the equation. Check for any extraneous solutions.

$$x^{\frac{4}{3}} + 7 = 88$$

$x = 27, -27$

Solve the equation. Check for any extraneous solutions.

$$\sqrt{2x} - \sqrt{x^2 - 24} = 0$$

$x = 6$

Solve the equation. Check for any extraneous solutions.

$$(x+5)^{\frac{1}{6}}+3=0$$

No Solution