

Homework ?
DLT

WORD PROBLEMS FROM HW

Apr 3-11:35 AM

Practice - YOU TRY SOME...
Compositions of functions DLT soon

$f(x) = 4x - 2$, $g(x) = 3x^{-1}$, $h(x) = \frac{x-3}{2}$

1) $f(g(x)) =$
 $f(x) = 4x - 2$
 $g(x) = 3x^{-1}$
 $4(3x^{-1}) - 2 = \frac{12}{x} - 2$

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

3) $f(h(x)) =$
 $f(x) = 4x - 2$
 $h(x) = \frac{x-3}{2}$
 $4(\frac{x-3}{2}) - 2 = 2(x-3) - 2 = 2x - 6 - 2 = 2x - 8$

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

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the inverse 1/2 sheet wu
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6.5 Graphing Square Root and Cube Root Functions

KEY CONCEPT For Your Notebook

Parent Functions for Square Root and Cube Root Functions

The parent function for the family of square root functions is $f(x) = \sqrt{x}$.
 The parent function for the family of cube root functions is $g(x) = \sqrt[3]{x}$.

Domain: $x \geq 0$, Range: $y \geq 0$

Domain and range: all real numbers

Hint: CHOOSE YOUR POINTS WISELY GRASSHOPPER

You can't have a negative number under a square root

x	y
0	0
1	1
4	2
9	3

x	y
-8	-1
-1	0
0	1
8	2

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Basic graphs of square & cube root functions

$f(x) = a\sqrt{x}$ What does "a" do?

1. $f(x) = 2\sqrt{x}$

x	y
0	0
1	2
4	4

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

x	y
-1	-5
0	0
1	5

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REFLECT ACROSS THE X AXIS

What if "a" is Negative?

1.) $f(x) = -2\sqrt{x}$

x	y
0	0
1	-2
4	-4

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

x	y
-1	1
0	0
1	-1

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TRANSLATIONS OF RADICAL FUNCTIONS The procedure for graphing functions of the form $y = a\sqrt{x-h} + k$ and $y = a\sqrt[3]{x-h} + k$ is described below.

KEY CONCEPT *For Your Notebook*

Graphs of Radical Functions

To graph $y = a\sqrt{x-h} + k$ or $y = a\sqrt[3]{x-h} + k$, follow these steps:

STEP 1 Sketch the graph of $y = a\sqrt{x}$ or $y = a\sqrt[3]{x}$.

STEP 2 Translate the graph horizontally h units and vertically k units.

DOMAIN

RANGE

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Adding old friends "h" and "k"

$f(x) = a\sqrt{x-h} + k$ "h" DOMAIN:
"k" RANGE:

1.) $y = 5\sqrt{x-1} + 3$

Steps:

① Choose 3 key points for plot them

② Shift each point "h" "k"

no h+k

$y = a\sqrt{x}$ $y = a\sqrt[3]{x}$

$y = 5\sqrt{x-1} + 3$ $y = 5\sqrt{x}$

Domain "h" $D: x \geq 1$
Range "k" $R: y \geq 3$

Shift $\rightarrow 1 \uparrow 3$

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2. $y = 5\sqrt[3]{x-1} + 3$

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

$\begin{array}{c|c} x & y \\ \hline -1 & -5 \\ 0 & 0 \\ 1 & 5 \end{array}$

Shift $\rightarrow 1$
 $\uparrow 3$

D: R
R: R

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3. $f(x) = \sqrt{x-1} + 3$

4. $f(x) = \sqrt{x+2} + 3$

5. $f(x) = -3\sqrt[3]{x+7} - 6$

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Graph the function. Then state the domain and range.

6. $y = -4\sqrt{x} + 2$ 7. $y = 2\sqrt{x+1}$ 8. $f(x) = \frac{1}{2}\sqrt{x-3} - 1$

9. $y = 2\sqrt[3]{x-4}$ 10. $y = \sqrt[3]{x} - 5$ 11. $g(x) = -\sqrt[3]{x+2} - 3$

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(Empty graphing area)

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