Panel 1 — Jan 31-2:25 PM

Warm Up

Solve

1. $(2x + 12)^{2/3} - 3 = 13$

$(2x+12)^{\frac{2}{3}} = (16)^{\frac{3}{2}} \rightarrow (\sqrt{16})^3$

$2x+12 = 64$
$2x = 52$
$\boxed{x = 26}$

2. $\sqrt{x + 3} = \sqrt{4x - 8}$

$(\sqrt{x+3})^2 = (\sqrt{4x-8})^2$

$x+3 = 4x-8$
$11 = 3x$
$\boxed{\frac{11}{3} = x}$

3. $-2\sqrt[3]{2x + 5} + 7 = 15$

$-2\sqrt[3]{2x+5} = 8$
$(\sqrt[3]{2x+5})^3 = (-4)^3$
$2x+5 = -64$
$2x = -69$
$\boxed{x = \frac{-69}{2}}$

4. $(3x + 21)^{4/3} + 9 = 90$

$\left((3x+21)^{\frac{4}{3}}\right)^{\frac{3}{4}} = (81)^{\frac{3}{4}}$

$(\sqrt[4]{81})^3$

$3x+21 = 27$
$3x = 6$
$\boxed{x = 2}$

Panel 2 — Mar 6-10:19 AM

Solve

5. $3\sqrt{4 - 3x} = 21$

6. $\sqrt[3]{2x + 7} = 5$

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

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

Panel 3 — Mar 6-10:21 AM

Solve.

9. $x - 3 = \sqrt{x - 1}$

$(x-3)^2 = (\sqrt{x-1})^2$
$(x-3)(x-3)$
$x^2 - 6x + 9 = x - 1$
$x^2 - 7x + 10 = 0$
$(x-5)(x-2) = 0$
$\boxed{x=5}\quad x=2$

$2-3 = \sqrt{2-1}$ ✓
$-1 \neq 1$

Panel 4 — Mar 6-3:55 PM

DAY 1 of the unit...do you remember

3rd Job...Evaluate with a calculator

$a^{\frac{n}{m}} = (\sqrt[n]{a})^m$

1. $\sqrt[4]{27} = 27^{\left(\frac{1}{4}\right)} = \boxed{2.28}$

2. $17^{\frac{2}{3}} = 17^{\left(\frac{2}{3}\right)} = \boxed{6.61}$

Panel 5 — Mar 6-10:11 AM

Graph & List Domain & Range

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

x	y
0	0
1	-2
4	-4

shift $\leftarrow 1 \downarrow 3$

D: $x \geq -1$ R: $y \leq -3$

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

x	y
-1	-2
0	0
1	2

shift $\rightarrow 2 \uparrow 1$

D: $\mathbb{R}$ R: $\mathbb{R}$

Panel 6 — Mar 6-10:12 AM

Evaluating. Combining Like Terms. Simplifying

1. $\left(\frac{1}{49}\right)^{\frac{-3}{2}} = \left(\frac{1}{7}\right)^{-3} = \boxed{343}$

2. $36^{\frac{-3}{2}} = 6^{-3} = \frac{1}{216}$

3. $-625^{\frac{1}{4}} = \boxed{-5}$

4. $\left(-\frac{1}{361}\right)^{\frac{-1}{2}} = \boxed{NP}$

5. $\dfrac{x^{\frac{2}{3}}}{x^{\frac{1}{3}}} = x^{\frac{2}{3}-\frac{1}{3}} = \boxed{x^{\frac{1}{3}}}$

6. $\dfrac{4x^{\frac{2}{3}}}{6x^{\frac{1}{3}}} = \boxed{\frac{2x^{\frac{1}{3}}}{3}}$

7. $\dfrac{8^{\frac{2}{3}}}{8^{\frac{1}{3}}} = \boxed{2}$

$8^{\frac{2}{3}-\frac{1}{3}} = 8^{\frac{1}{3}} = 2$

8. $(2x^3)^{-3} = 2^{-3}x^{-9} = \boxed{\frac{1}{8x^9}}$

Evaluating. Combining Like Terms. Simplifying $\sqrt[4]{x^4}=x$

① $7\sqrt[3]{5} + 47\sqrt[3]{5} = \boxed{54\sqrt[3]{5}}$

③ $\sqrt[4]{32x^5y^{14}z^{20}}$

② $\sqrt[3]{2} + 2\sqrt[3]{128}$

$\sqrt[3]{2} + 2\sqrt[3]{64\cdot2}$

$\sqrt[3]{2} + 8\sqrt[3]{2} = \boxed{9\sqrt[3]{2}}$

$\sqrt[4]{16\cdot2x^4xyy^{12}z^{20}}$

$2x^1y^3z^5\sqrt[4]{2xy^2}$

④ $\dfrac{8x^{-2}y^4}{6x^5y^{-3}} \cdot \dfrac{3x^4y^7}{2x^{-2}y^{-5}}$ = straight across top bottom

One... coefficient one x one y no neg exp's

$\dfrac{24x^2y^{11}}{12x^3y^{-8}} = \boxed{\dfrac{2y^{19}}{x}}$

$\dfrac{y^{11}}{y^{-8}} = y^{19} = \boxed{\dfrac{1}{y^{19}}}$

Mar 6-10:13 AM

Function Operations and Compositions...

Let $f(x) = 3x + 2$, $g(x) = x^{-1}$, and $h(x) = x^2-1$
Perform the operation

1. $g(x) - f(x)$

$\boxed{x^{-1} - (3x+2)}$

2. $g(x)f(x) = x^{-1}(3x+2)$

$3 + 2x^{-1} =$ $\boxed{3 + \dfrac{2}{x}}$

3. $g(f(x)) =$ $g(x) = x^{-1}$ $f(x) = (3x+2)$

$g(f(x)) = (3x+2)^{-1} = \dfrac{1}{3x+2}$

4. $h(f(x)) =$ $h(x) = x^2-1$ $f(x) = (3x+2)$

$h(f(x)) =$

$(3x+2)^2 - 1$

$(3x+2)(3x+2) - 1$

$9x^2+12x+4-1$

$\boxed{9x^2+12x+3}$

Mar 6-10:14 AM

Find the Inverses

1. $y = -3(x-1)^{\frac{2}{5}} + 2$

$x = -3(y-1)^{\frac{2}{5}} + 2$

$x-2 = -3(y-1)^{\frac{2}{5}}$

$\left(\dfrac{x-2}{-3}\right)^{\frac{5}{2}} = \left((y-1)^{\frac{2}{5}}\right)^{\frac{5}{2}}$

$\boxed{\left(\dfrac{x-2}{-3}\right)^{\frac{5}{2}} + 1 = y}$

2. $y = -\dfrac{1}{2}\sqrt[4]{(x-4)} + 2$

Mar 6-10:18 AM

How to verify if an equation is an inverse to another equation...

Feb 10-7:45 AM

PAINT STORE You have a $10 gift certificate to a paint store. The store is offering 15% off your entire purchase of any paints and painting supplies. You decide to purchase a $30 can of paint and $25 worth of painting supplies.

Use composition of functions to do the following:

- Find the sale price of your purchase when the $10 gift certificate is applied before the 15% discount.

- Find the sale price of your purchase when the 15% discount is applied before the $10 gift certificate.

Write an equation with the discounted price f(x) _____

Write an equation with the gift certificate g(x) _____

Write an equation using compositions f(g(x))_____

Write an equation using compositions g(f(x))_____

Which is a better option for the buyer

Feb 9-9:02 AM

WIND VELOCITY In a hurricane, the mean sustained wind velocity v (in meters per second) is given by

$$v(p) = 6.3\sqrt{1013 - p}$$

where p is the air pressure (in millibars) at the center of the hurricane. Estimate the air pressure at the center of a hurricane when the mean sustained wind velocity is 54.5 meters per second.

Mar 6-10:20 AM

Review 6.4 Inverses
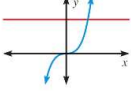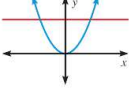How to determine if an inverse of a function is itself a function?\
REMEMBER: THE DEFINITION OF A FUNCTION

HORIZONTAL LINE TEST You can use the graph of a function f to determine whether the inverse of f is a function by applying the *horizontal line test*.

KEY CONCEPT *For Your Notebook*

Horizontal Line Test

The inverse of a function f is also a function if and only if no horizontal line intersects the graph of f more than once.

Inverse is a function

Inverse is not a function

Feb 9-9:12 AM

Mar 11-1:48 PM