

Warm Up

1) Find the inverse.

$$y = 2(x-4)^{5/3}$$

$$\frac{x}{2} = \frac{2(y-4)^{5/3}}{2}$$

$$\left(\frac{x}{2}\right)^{3/5} = \left(\frac{2(y-4)^{5/3}}{2}\right)^{3/5}$$

$$\left(\frac{x}{2}\right)^{3/5} = y - 4$$

$$\left(\frac{x}{2}\right)^{3/5} + 4 = y$$

$$y = \left(\frac{x}{2}\right)^{3/5} + 4$$

$$f^{-1}(x) = \left(\frac{x}{2}\right)^{3/5} + 4$$

Solve.

$$2) \sqrt{x-6} = (x-8)^2$$

$$\sqrt{10-6} = 10-8$$

$$\sqrt{4} = 2$$

$$2 = 2$$

$$\sqrt{7-6} = 7-8$$

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

$$1 \neq -1$$

$$x-6 = (x-8)(x-8)$$

$$x-6 = x^2 - 16x + 64$$

$$0 = x^2 - 17x + 70$$

$$0 = (x-10)(x-7)$$

$$x=10 \quad x=7$$

Homework Questions

$$\textcircled{12} \quad 3(\sqrt[3]{x-1})^2 + 4 = 52$$

$$\frac{3(\sqrt[3]{x-1})^2}{3} = \frac{48}{3}$$

$$\sqrt[3]{x-1}^2 = \sqrt[3]{16}$$

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

$$x-1 = 64$$

$$x = 65$$

$$3(\sqrt[3]{65-1})^2 + 4 = 52$$

$$3(\sqrt[3]{64})^2 + 4 = 52$$

$$3(4)^2 + 4 = 52$$

$$3(16) + 4$$

$$52 = 52$$

evens

Jeopardy

*Solving ws

14

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

$$4x = x^2$$

$$-4x \quad -4x$$

$$0 = x^2 - 4x$$

$$0 = x(x-4)$$

$$x=0 \quad x=4$$

Algebra 2 Trig Daily Learning Target Quiz
6.6 Solving

1.) Solve. $(x-4)^{\frac{2}{3}} - 9 = 16$	2.) Solve. $\frac{1}{2}x^{\frac{5}{2}} = 16$
3.) Solve. $\sqrt[3]{x} - 10 = -3$	4.) Solve. $\sqrt{x-6} = x-8$

Extra Credit

For all nonzero a and b , $\frac{(10a^2b^2)(-9a^2b^3)}{6a^2b^4} = ?$

A. $-15b$

B. $-15a^2b$

C. $-15a^2b^2$

D. $\frac{a^2b^2}{15}$

E. $\frac{12}{b}$

*You need a calculator for today's lesson.

6.1

$$V = \frac{4}{3}\pi r^3$$
$$\frac{905}{\left(\frac{4}{3}\pi\right)} = \frac{\frac{4}{3}\pi r^3}{\frac{4}{3}\pi}$$
$$\sqrt[3]{216.05} = \sqrt[3]{r^3}$$

60. **SHOT PUT** The shot used in men's shot put has a volume of about 905 cubic centimeters. Find the radius of the shot. (*Hint: Use the formula $V = \frac{4}{3}\pi r^3$ for the volume of a sphere.*) ██████████

$$r = 6 \text{ cm}$$

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6.1

62. **INFLATION** If the average price of an item increases from p_1 to p_2 over a period of n years, the annual rate of inflation r (expressed as a decimal) is given by $r = \left(\frac{p_2}{p_1}\right)^{1/n} - 1$. Find the rate of inflation for each item in the table. Write each answer as a percent rounded to the nearest tenth.

Item	Price in 1950	Price in 1990
Butter (lb)	\$.7420	\$ 2.195
Chicken (lb)	\$.4430	\$ 1.087
Eggs (dozen)	\$.6710	\$ 1.356
Sugar (lb)	\$.0936	\$.4560

$$r = \left(\frac{1.087}{.4430}\right)^{1/40} - 1$$

$$r = \left(\frac{.4560}{.0936}\right)^{1/40} - 1$$

$$r = .0227$$

$$2.27\%$$


$$4.00\%$$

6.2

84. **AIRPLANE VELOCITY** The velocity v (in feet per second) of a jet can be approximated by the model

$$v = 8.8\sqrt{\frac{L}{A}}$$

where A is the area of the wings (in square feet) and L is the lift (in Newtons). Find the velocity of a jet with a wing area of 5.5×10^3 square feet and a lift of 1.4×10^7 Newtons. XXXXXXXXXX

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6.3

44. ★ **SHORT RESPONSE** The cost (in dollars) of producing x sneakers in a factory is given by $C(x) = 60x + 750$. The number of sneakers produced in t hours is given by $x(t) = 50t$. Find $C(x(t))$. Evaluate $C(x(5))$ and explain what this number represents.

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$$\begin{aligned}C(x(t)) &= 60(50t) + 750 \\ &= 3000t + 750 \\ &\quad \uparrow \\ &= 3000(5) + 750 \\ &= \$15,750\end{aligned}$$

6.3

45. **MULTI-STEP PROBLEM** An online movie store is having a sale. You decide to open a charge account and buy four DVDs.




- a. Use composition of functions to find the sale price of \$85 worth of DVDs when the \$15 discount is applied before the 10% discount. [REDACTED]
- b. Use composition of functions to find the sale price of \$85 worth of DVDs when the 10% discount is applied before the \$15 discount. [REDACTED]
- c. Which order of discounts gives you a better deal? *Explain.* [REDACTED]


$$\begin{array}{r}
 85 \\
 -15 \\
 \hline
 70 \\
 \times .90 \\
 \hline
 63
 \end{array}$$

$$\begin{array}{r}
 85 \\
 \times .90 \\
 \hline
 76.5 \\
 -15 \\
 \hline
 61.5
 \end{array}$$

6.4

47. **MULTI-STEP PROBLEM** When calibrating a spring scale, you need to know how far the spring stretches for various weights. Hooke's law states that the length a spring stretches is proportional to the weight attached to it. A model for one scale is $l = 0.5w + 3$ where l is the total length (in inches) of the stretched spring and w is the weight (in pounds) of the object.
- Find the inverse of the given model. $w = 2l - 6$
 - If you place a weight on the scale and the spring stretches to a total length of 6.5 inches, how heavy is the weight? **7 lb**

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$$\begin{aligned}
 l &= 0.5w + 3 \\
 l - 3 &= 0.5w \\
 \frac{l-3}{0.5} &= \frac{0.5w}{0.5} \\
 w &= \frac{l-3}{0.5} \\
 w &= \frac{6.5-3}{0.5}
 \end{aligned}$$


6.4

48. ★ **EXTENDED RESPONSE** At the start of a dog sled race in Anchorage, Alaska, the temperature was 5°C . By the end of the race, the temperature was -10°C . The formula for converting temperatures from degrees Fahrenheit F to degrees Celsius C is $C = \frac{5}{9}(F - 32)$.
- Find the inverse of the given model. *Describe* what information you can obtain from the inverse.
 - Find the Fahrenheit temperatures at the start and end of the race. [REDACTED]
 - Use a graphing calculator to graph the original function and its inverse. Find the temperature that is the same on both temperature scales. [REDACTED]

$$\frac{5}{9}C = \frac{5}{9}(F - 32)$$

$$\frac{5}{9}C = F - 32$$

$$\frac{5}{9}C + 32 = F$$

$$41^{\circ}\text{F}$$

$$14^{\circ}\text{F}$$

6.6

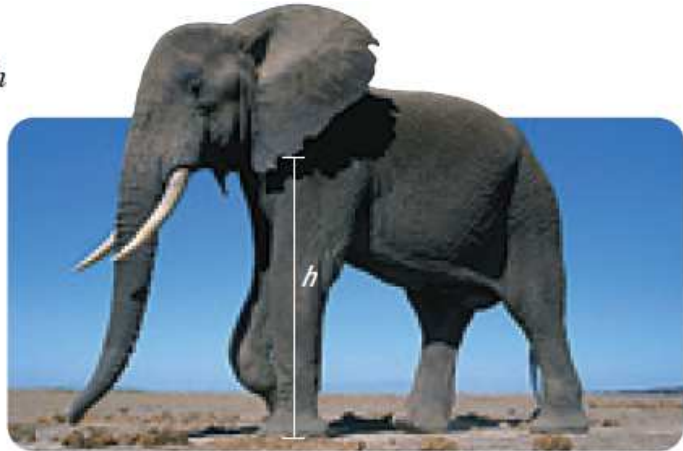
58. **CONSTRUCTION** The length l (in inches) of a standard nail can be modeled by $l = 54d^{3/2}$ where d is the diameter (in inches) of the nail. What is the diameter of a standard nail that is 3 inches long?

6.6

59. ★ **SHORT RESPONSE** Biologists have discovered that the shoulder height h (in centimeters) of a male African elephant can be modeled by

$$h = 62.5\sqrt[3]{t} + 75.8$$

where t is the age (in years) of the elephant. *Compare* the ages of two elephants, one with a shoulder height of 150 centimeters and the other with a shoulder height of 250 centimeters.



HW: WP Worksheet

Review assignment-due on test day

Warm Up

★ Evaluating. Combine Like Terms. Simplifying

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

$$-625^{\frac{1}{4}} =$$

$$\left(-\frac{1}{361}\right)^{\frac{-1}{2}} =$$

$$\frac{4x^{\frac{2}{3}}}{6x^{\frac{1}{3}}}$$

$$(2x^3)^{-3}$$

$$\sqrt[3]{2} + 2\sqrt[3]{128}$$

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

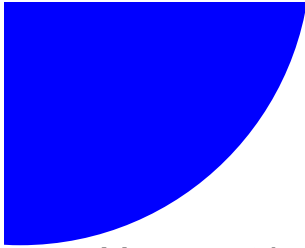
Check WP WS

Non calculator part:

- *Simplifying expressions.
- *Evaluating (exactly like Mad Minute quiz).
- *Adding and Subtracting radicals.
- *Solving Radical Functions
- *Graphing
- *Inverses

Calculator part:

- *Word Problems
 - Compositions
 - Inverses
 - Solving Radical Functions



QUIZ-QUIZ Trade

The Rules:

- You must be paired up at all times. If you find yourself without a partner, put your hand in the air.
- You are not allowed to return to someone you have already traded with.
- Please find at least 5 different partners that are not sitting at your pod.
- You can give your partner a clue to help them to get the answer right but not the answer itself.

 Inverses

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

 Compositions

$$f(x) = 2x + 3$$

$$g(x) = x - 1$$

$$h(x) = \frac{x - 5}{2}$$

$$g(f(x)) =$$

$$h(f(x)) =$$

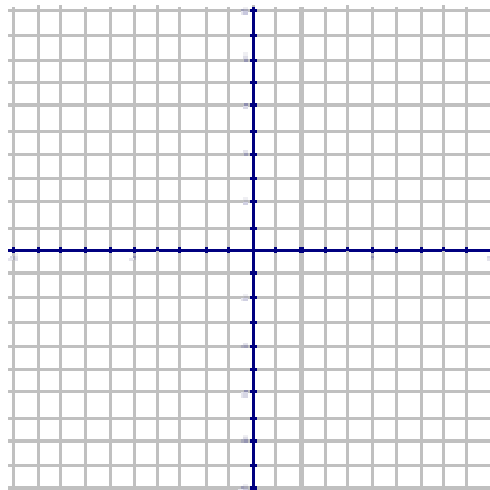


Graphing

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

D:

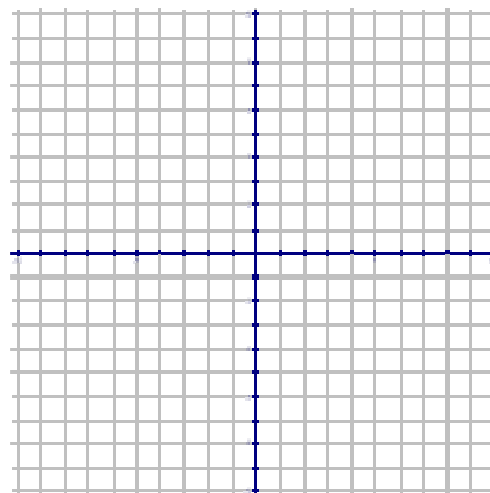
R:



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

D:

R:



Station Work

* 7 minutes per Station

Assignment : REVIEW WS

*All retakes must be done before Spring Break!!!

CH 6 Test ___