

Warm Up for Quiz Evaluate

- ① $16^{-\frac{1}{2}} = (\sqrt{16})^{-1} = 4^{-1} = \frac{1}{4}$
- ② $6^{-3} = \frac{1}{216}$
- ③ $324^{-\frac{1}{2}} = \frac{1}{18}$
- ④ $(\frac{1}{27})^{\frac{2}{3}} = (\frac{1}{\sqrt[3]{27}})^2 = (\frac{1}{3})^2 = \frac{1}{9}$
- ⑤ $-\frac{1}{225} = -(\frac{1}{\sqrt{225}})^2 = -(\frac{1}{15})^2 = -\frac{1}{225}$
- ⑥ $125^{-\frac{2}{3}} = (\sqrt[3]{125})^{-2} = 5^{-2} = \frac{1}{25}$
- ⑦ $(\frac{1}{4})^{\frac{1}{2}} = \frac{1}{2}$ (WRP)
- ⑧ $-\frac{1}{4}^{\frac{1}{2}} = -\sqrt{\frac{1}{4}} = -\frac{1}{2}$
- ⑨ $-8^{\frac{2}{3}} = (\sqrt[3]{-8})^2 = (-2)^2 = 4$
- ⑩ $(\frac{2}{3})^{-2} = (\frac{3}{2})^2 = \frac{9}{4}$

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Simplify

- a) $\frac{\sqrt[5]{96}}{\sqrt[5]{3}} = \sqrt[5]{\frac{96}{3}} = \sqrt[5]{32} = 2$
- b) $\frac{\sqrt[3]{250}}{\sqrt[3]{2}} = \sqrt[3]{\frac{250}{2}} = \sqrt[3]{125} = 5$
- c) $\sqrt[3]{\frac{8}{27}} = \frac{\sqrt[3]{8}}{\sqrt[3]{27}} = \frac{2}{3}$

$\frac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\frac{a}{b}}$

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1.5) $2\sqrt[3]{5} + 7\sqrt[3]{5} = 9\sqrt[3]{5}$

2.) a) $\sqrt[3]{5} + \sqrt[3]{40}$
 b) $6\sqrt[3]{5} + 4\sqrt[3]{625}$

a) $\sqrt[3]{5} + \sqrt[3]{8 \cdot 5} = \sqrt[3]{5} + 2\sqrt[3]{5} = 3\sqrt[3]{5}$

b) $6\sqrt[3]{5} + 4\sqrt[3]{5 \cdot 125} = 6\sqrt[3]{5} + 20\sqrt[3]{5} = 26\sqrt[3]{5}$

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p424 H.W

37) $-6\sqrt{2} + 2\sqrt{2 \cdot 56} =$
 $-6\sqrt{2} + 2\sqrt{128 \cdot 2} =$
 $-6\sqrt{2} + 4\sqrt{2} = -2\sqrt{2}$

Feb 23-11:57 AM

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

$2 \cdot \frac{1}{4} = \frac{1}{2}$
 $\frac{1}{2} - \frac{2}{4} = -\frac{1}{2}$

Feb 23-12:00 PM

64) $x\sqrt{9x^3} - 2\sqrt{x^5} =$
 $3x^2\sqrt{x} - 2x^2\sqrt{x} =$
 $x^2\sqrt{x}$

$\sqrt{x} = \sqrt[2]{x}$

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3.) a) $\sqrt[3]{81} - \sqrt[3]{24}$
 b) $5\sqrt[3]{48} - \sqrt[3]{750}$


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Quiz Over Properties...

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6.3 Perform Function Operations and Composition

Before You performed operations with algebraic expressions.
Now You will perform operations with functions.
Why? So you can model biological processes, as in Example 3.



If $f(x) = 5x$, $g(x) = x + 2$ Then...

Add Functions $f(x) + g(x) = 5x + x + 2 = 6x + 2$
 Subtract Functions $g(x) - f(x) = x + 2 - 5x = -4x + 2$
 Multiply Functions $g(x) \cdot f(x) = (x + 2) \cdot 5x = 5x^2 + 10x$
 Divide Functions $\frac{f(x)}{g(x)} = \frac{5x}{x + 2}$

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$f(x) = 4x^{1/2}$ $g(x) = -9x^{1/2}$

Add $f(x) + g(x) = 4x^{1/2} - 9x^{1/2} = -5x^{1/2}$
 Subtract $g(x) - f(x) = -9x^{1/2} - 4x^{1/2} = -13x^{1/2}$
 Multiply $f(x) \cdot g(x) = 4x^{1/2} \cdot -9x^{1/2} = -36x$
 Divide $\frac{g(x)}{f(x)} = \frac{-9x^{1/2}}{4x^{1/2}} = -\frac{9}{4}$

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Compositions of Functions:
 1st Job - Evaluate one function within another function
 $f(x) = 5x$, $g(x) = x + 2$

$f(g(x)) = 5(x + 2) = 5x + 10$ $g(f(x)) = 5x + 2$
 $f(x) = 5x$ $f(x) = 5x$
 $g(x) = x + 2$ $g(x) = x + 2$

another way of saying the same thing...
 $f \circ g$ $f(g(x))$ "f of g of x"

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2nd Job - Find the indicated value of the new function found

$f(x) = 5x$, $g(x) = x + 2$

$f(g(4)) = 30$ $g(f(-6)) = -28$

Steps
 • plug $x=4$ into g
 • The answer goes into f

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EXAMPLE 4 Standardized Test Practice

Let $f(x) = 2x - 7$ and $g(x) = x^2 + 4$. What is the value of $g(f(3))$?

(A) -5 (B) -3 (C) 3 (D) 5

Solution
 To evaluate $g(f(3))$, you first must find $f(3)$.
 $f(3) = 2(3) - 7 = -1$
 Then $g(f(3)) = g(-1) = (-1)^2 + 4 = 1 + 4 = 5$.
 So, the value of $g(f(3))$ is 5.
 The correct answer is D. (A) (B) (C) (D)

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Practice - YOU TRY SOME...

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

1) $f(g(x)) =$ 2) $g(f(x)) =$

3) $f(h(x))$ 4) $g(g(x))$

$2x-2$
 $2x-8$

Jan 12-9:24 AM

Word Problems. - why Mrs Brenner wont shop at Macy's

Price of Purchases
 X

You have a \$10 gift card and a 15% off coupon to Macys.
 Which deal is better.
 Compositions 1st then 2nd...which is better 1st then the other...I'm already confused

$f(x) = X - 10$ $g(x) = .85x$
 gift Card % off coupon

① $F(g(x)) = .85x - 10$ Which is?
 $= \$75$ better deal
 $X = 100$

② $g(f(x)) = .85(x - 10)$
 $= \$76.50$

Jan 12-10:04 AM



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