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ALGEBRA I BOOT CAMP TAKE 2

Homework: Practice Problems in this Packet



Simplifying rational expressions:

Example #1: Simplify each expression.

a. $\frac{3x^3 - 2x}{5x^3}$

You practice: Simplify each expression.

1. $\frac{20d^4}{70d^2}$

2. $\frac{3x - 24}{24}$

3. $\frac{20}{4p + 36}$

4. $\frac{8n^3 - 4n^2}{12n^4 - 6n^3}$

5. $\frac{8x^3}{2x^3 + 10x}$

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Simplifying expressions using order of operations:

ORDER OF OPERATIONS:

P

E

M

D

A

S

Example #2: Simplify each expression.

a. $4(4x^{-1})^{-1}$

You practice: Simplify each expression.

1. $4(5x - 2)^{-1}$

2. $-(x - 2)^2$

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

4. $2(x^2)^{1/2}$

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5. $3\left(\frac{x-8}{3}\right)$

6. $3(2x-7)^{-1}$

7. $3(3x^{-1})^{-1}$

8. $2(3x^{-1}) - 7$

9. $3\left(\frac{x+4}{3}\right)^{-1}$

10. $4(2x^2)^2 - 2x^2$

11. $2(4x^2 - x)^2$

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DOMAIN:

Look for FRACTION (DENOMINATOR) EXPONENT on the VARIABLE!

$x^{1/n}$:

If n is EVEN: all real nonnegative #s

If n is ODD: all real #s

Look for VARIABLE in the DENOMINATOR:

$\frac{1}{x}$:

Set denominator equal to 0 and remove the value from the domain: all real #s, $x \neq 0$

Example #3: State the domain.

a. $x^2 + x$

b. $\sqrt[10]{x}$

c. $\frac{4}{2x - 5}$

You practice: State the domain.

1. $-2x^3 + 2x$

2. $\frac{5x^2 - 2}{3x^2}$

3. $2x$

4. $2 - \frac{1}{2x}$

5. \sqrt{x}

6. $6x^2 - x$

7. $3x^{1/6} + x^{1/3}$

8. $\frac{2}{x^{3/2}}$

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

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Composition Practice:

Example #1: Let $f(x) = 2x - 1$, $g(x) = 3x$, and $h(x) = x^2 + 1$. Perform the indicated operation.

a. $g(f(x))$

b. $h(g(x))$

c. $f(h(x))$

You practice:

1. Let $f(x) = 9 - x$, $g(x) = x^2 + x$, and $h(x) = x - 2$. Perform the indicated operation.

a. $h(g(x))$

b. $g(h(x))$

c. $f(h(x))$

2. Let $f(x) = 4x^2 - x$ and $g(x) = 2x^2$. Perform the indicated operation and state the domain.

a. $f(x) + g(x)$

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

c. $f(x) \cdot g(x)$

d. $\frac{f(x)}{g(x)}$

e. $f(g(x))$

f. $g(f(x))$

g. $f(f(x))$

h. $g(g(x))$

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QUIZ REDO: Redo this page of your quiz – correctly!

Let $f(x) = 5x^3 - 2x$ and $g(x) = 3x^3$. Perform the indicated operation and state the domain.

8.) $g(x) - f(x)$ 9.) $\frac{f(x)}{g(x)}$

answer: _____

answer: _____

domain: _____

domain: _____

Let $f(x) = 4x^{-1}$ and $g(x) = 5x - 2$. Perform the indicated operation and state the domain.

10.) $f(g(x))$ 11.) $f(f(x))$

answer: _____

answer: _____

domain: _____

domain: _____