



**Mastery
Worksheets**

MAT 1033

Test 4

- Rational Equations
- Variation
- Rational Exponents
- Simplifying Radical Expressions
- Rationalizing the Denominator



Mastery Worksheet

MAT 1033



MY NAME IS:

Rational Equations

Test 3
Worksheet 14

Practice Session #

Date:

/ /

To determine which values cannot be a solution to a rational equation set the denominator equal to zero and solve the equation.

Let's get to work...

Determine the values that make the rational expression undefined.

1 $\frac{x-9}{4-x}$

2 $\frac{x^2-4x-45}{x^2-9}$

- To solve a rational equation without factoring:
1. Identify the LCD of the equation.
 2. Multiply both sides of the equation by the LCD.
 3. Solve and check solution(s).

Let's get to work...

Solve.

3 $\frac{6}{x+5} - \frac{8}{x+5} = \frac{4}{7}$

4 $\frac{40}{x-2} - 1 = \frac{42}{x+2}$

Test 3 | Rational Equations

Worksheet 14

To solve a rational equation with factoring:

1. Factor the denominator of all rational expressions.
2. Identify the LCD of the equation.
3. Multiply both sides of the equation by LCD.
4. Solve and Check solution(s).

Let's get to work...

Solve.

5
$$\frac{x}{x+4} + \frac{8x+28}{x^2+7x+12} = \frac{x-3}{x-6}$$

6
$$\frac{x+2}{x^2-16} + \frac{x-3}{x^2-3x-4} = \frac{2x-3}{x^2+5x+4}$$

How do I feel?

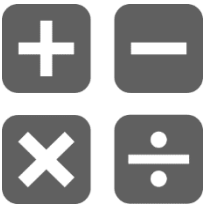
Awesome!
I Aced it!


Easy


Medium


Hard

I need help with...



Mastery Worksheet

MAT 1033

MY NAME IS:

Variation

Test 3
Worksheet 16

Practice Session #

Date:

/ /

Direct Variation $y = kx$ is equivalent to the statements

y varies **directly** as x .

y is **directly proportional** to x .

Let's get to work...

Find the constant of variation and write the equation of variation.

1

The variable y varies directly as x and $y = 20$ when $x = 80$.

2

Suppose that y is directly proportional to x and $y = 15$ when $x = 3$.

Inverse Variation

$y = \frac{k}{x}$ is equivalent to the statements

y varies **inversely** as x .

y is **inversely proportional** to x .

Find the constant of variation and write the equation of variation.

3

Suppose that y is inversely proportional to x and $y = 0.5$ when $x = 3.8$

4

The variable z varies inversely as t and $z = 2.3$ when $t = 72$.

5

The number of patients Dr. Wong can see varies directly as the time it takes her to see them. If she can see 11 patients in 3 hours, how long would it take her to see 66 patients?

6

The speed of a vehicle varies inversely as the time it takes to travel a fixed distance. If a vehicle travels a fixed distance at 20 miles per hour in 60 minutes, how fast must it travel to cover the same distance in 25 minutes?

How do I feel?

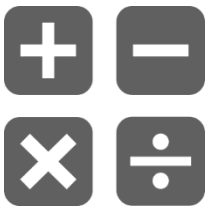
Awesome!
I Aced it!


Easy


Medium


Hard

I need help with...



Mastery Worksheet

MAT 1033

MY NAME IS:

Rational Exponents

Test 4
Worksheet 17

Practice Session #

Date:

/ /

Definition of $x^{m/n}$: $x^{m/n} = \sqrt[n]{x^m}$ or $(\sqrt[n]{x})^m$ m, n positive integers and share no common factors

Let's get to work...

Evaluate.

1 $27^{1/3}$

2 $-16^{1/4}$

3 $(-16)^{1/4}$

4 $(-64)^{2/3}$

Properties of Exponents:

$$x^A x^B = x^{A+B}$$

$$\frac{x^A}{x^B} = x^{A-B}$$

$$(x^A)^B = x^{AB}$$

5 $x^{3/4} x^{2/3}$

6 $x^{-1/4} x^{3/4}$

7 $\frac{x^{1/4} x^{-1/3}}{x^{2/3}}$

8 $(4x^6)^{-1/2}$

9 $\frac{x^{1/8} y^{-2/3}}{x^{1/4}}$

10 $\frac{-6x^{-3/4}}{x^{-1/4}}$

How do I feel?

Awesome!
I Aced it!

Easy

Medium

Hard

I need help with...



Mastery Worksheet

MAT 1033

MY NAME IS:

Simplifying Radical Expressions

Test 4
Worksheet 18

Practice Session #

Date:

/ /

For x and y real numbers and $\sqrt[n]{x}$ and $\sqrt[n]{y}$ real numbers : $\sqrt[n]{xy} = \sqrt[n]{x} \cdot \sqrt[n]{y}$

Let's get to work...

Simplify.

1

$\sqrt{4x^3}$

2

$\sqrt[3]{54x^3}$

3

$\sqrt{20x^3y^5}$

4

$\sqrt[3]{-27x^8}$

5

$\sqrt{\frac{12x^3}{3x}}$

6

$2\sqrt{27} + 5\sqrt{75}$

7

$5\sqrt[3]{16} - 18\sqrt[3]{2}$

8

$10\sqrt{40} - 5\sqrt{50} + 3\sqrt{90}$

9

$x\sqrt{20x} + 4\sqrt{45x^3}$

10

$12\sqrt{50} \cdot 3\sqrt{2}$

11

$3\sqrt[3]{4x} \cdot 2\sqrt[3]{2x^2}$

12 $3\sqrt{2}(12-10\sqrt{10})$

13 $(2\sqrt{7}-5\sqrt{3})(\sqrt{7}+4\sqrt{3})$

14 $(\sqrt{5}-8)(\sqrt{5}+8)$

How do I feel?

Awesome!
I Aced it!



Easy

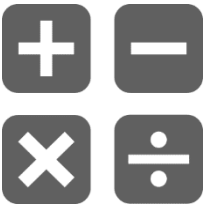


Medium



Hard

I need help with...



Mastery Worksheet

MAT 1033

MY NAME IS:

Rationalizing the Denominator

Test 4
Worksheet 19

Practice Session #

Date:

/ /

For x and y real numbers and $\sqrt[n]{x}$ and $\sqrt[n]{y}$ real numbers: $\sqrt[n]{\frac{x}{y}} = \frac{\sqrt[n]{x}}{\sqrt[n]{y}}$

Let's get to work...

Rationalize the denominator and simplify.

1 $\frac{5}{\sqrt{2x}}$

2 $\frac{4}{\sqrt[3]{2x^2}}$

3 $\sqrt{\frac{8}{3xy^2}}$

4 $\frac{14}{3-\sqrt{5}}$

5 $\frac{\sqrt{8}}{\sqrt{3}+1}$

6 $\frac{x+3}{\sqrt{x}+\sqrt{3}}$

How do I feel?

Awesome!
I Aced it!

Easy

Medium

Hard

I need help with...