

# Honors Algebra II

## Unit 5 – Rational Functions



MATH, ENGINEERING,  
AND SCIENCE ACADEMY



Name: Detective Papi

Six teachers in a school building were surprised to find a colleague was "injured." They must figure out the crime before the bell rings. The question is *Whodunnit?* And how... The teacher, last known whereabouts and method that are left unaccounted for are the solution.

<p>1. <math>\frac{1}{x+13} = \frac{1}{1}</math></p> <p><math>1 = x+13</math>  <math>-13 \quad -13</math></p> <p><math>x = -12</math></p>	<p>2. <math>\frac{x-2}{x-1} = \frac{5}{1}</math></p> <p><math>x-2 = 5x-5</math>  <math>-5x+2 \quad -5x+2</math></p> <p><math>-4x = -3</math>  <math>\frac{-4x}{-4} = \frac{-3}{-4}</math></p> <p><math>x = \frac{3}{4}</math></p>
<p>3. <math>\frac{4x^2+1}{x} = \frac{4x+16}{1}</math></p> <p><math>4x^2+1 = 4x^2+16x</math></p> <p><math>1 = 16x</math></p> <p><math>x = \frac{1}{16}</math></p>	<p>4. <math>\frac{4x-2}{-10x-10} = \frac{5}{1}</math></p> <p><math>4x-2 = -50x-50</math>  <math>+50x+2 \quad +50x+2</math></p> <p><math>54x = -48</math>  <math>\frac{54x}{54} = \frac{-48}{54}</math></p> <p><math>x = -\frac{8}{9}</math></p>
<p>5. <math>\frac{x-8}{2x+7} = 1 = 0</math></p> <p><math>\frac{x-8}{2x+7} = \frac{1}{1}</math></p> <p><math>x-8 = 2x+7</math>  <math>-x-7 \quad -x-7</math></p> <p><math>-15 = x</math></p>	<p>6. <math>\frac{1}{3x} = \frac{2}{1} = \frac{1}{2x}</math></p> <p><math>\frac{2}{1} = \frac{1}{2x}</math></p> <p><math>2 - 12x = 3</math>  <math>-2 \quad -2</math></p> <p><math>-12x = 1</math>  <math>\frac{-12x}{-12} = \frac{1}{-12}</math></p> <p><math>x = -\frac{1}{12}</math></p>

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7.  $\frac{x+1}{x+7} = \frac{x-2}{x}$

$$x^2 + x = x^2 + 5x - 14$$

$$+14 - x \quad -x + 14$$

$$\frac{14}{4} = \frac{4x}{4} \quad \boxed{x = 3.5}$$

8.  $\frac{10}{x(x-2)} - \frac{5}{x-2} = -\frac{4}{x}$

$$10 - 5x = -4x + 8$$

$$-8 + 5x \quad +5x - 8$$

$$\boxed{2 = x}$$

No Solution

9.  $\frac{2x-5}{x-4} = \frac{11}{x-4}$

$$2x - 5 = 11$$

$$2x = 16$$

$$\boxed{x = 8}$$

10.  $\frac{3x}{(x+2)(x-2)} + \frac{1}{x-2} = \frac{2}{x+2}$

$$3x + x + 2 = 2x - 4$$

$$4x + 2 = 2x - 4$$

$$-2x - 2 \quad -2x - 2$$

$$\frac{2x}{2} = \frac{-6}{2} \quad \boxed{x = -3}$$

Who is the "criminal"?

The three boxes left unchecked will reveal the crime.

The Players

The Last Known  
Whereabouts

The Method

Ms. Newsome	<input checked="" type="checkbox"/>
Ms. Rosales	<input type="checkbox"/>
Coach Scott	<input checked="" type="checkbox"/>
Mr. Tibbals	<input checked="" type="checkbox"/>
Ms. Sa	<input checked="" type="checkbox"/>
Mr. Haggerty	<input checked="" type="checkbox"/>

Bathroom	<input checked="" type="checkbox"/>
Gym	<input type="checkbox"/>
Kitchen	<input checked="" type="checkbox"/>
Library	<input checked="" type="checkbox"/>
Cafeteria	<input checked="" type="checkbox"/>
Auditorium	<input checked="" type="checkbox"/>

Food Poisoning	<input checked="" type="checkbox"/>
Unlucky Slip	<input checked="" type="checkbox"/>
Electrocution	<input checked="" type="checkbox"/>
Fallen Object	<input checked="" type="checkbox"/>
Venomous Bite	<input checked="" type="checkbox"/>
Chemical Reaction	<input type="checkbox"/>