

Unit 3 Radical and Rational Functions Study Guide

<p><i>This test will be out of 64 points.</i></p> <p><i>What is the make-up of the test?</i></p> <ul style="list-style-type: none"> • 7 Multiple Choice • 19 Free Response <p>You will have the whole class period to complete this test. Come with specific questions if you have them before the test as there will be no review.</p>	<p><i>What should I expect to see?</i></p> <ul style="list-style-type: none"> • Inverse and Direct variation • Solving Radical Equations • Solving Rational Equations • Transformations from Parent Function • Graphing Radical Functions • Graphing Rational Functions • Identifying Key Features in Graphs • Moving between Radical and Exponential Form
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Steps for Solving Equations:

<p><i>Radical:</i></p> <ol style="list-style-type: none"> 1. Isolate the Radical 2. Cancel the Radical 3. Solve for x. 4. Check for Extraneous Solutions. 	<p><i>Rational:</i></p> <ol style="list-style-type: none"> 1. Cross Multiply 2. Solve for x. 3. Check for Extraneous Solutions by plugging into both sides of the equation.
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Extraneous Solutions are answers that are algebraically correct, but do not serve as solutions.

Graphing Equations:

<p><i>Radical:</i></p> <p>**Horizontal Translation outside of radical. (+) Up (-) Down</p> <p>**Vertical Translation is inside with x. (+) Left (-) Right</p> <p>**Reflections over axes as seen by negative Outside Radical (x) Inside Radical (y)</p> <p>**Dilations: $a > 1$ Stretch $a < 1$ Shrink</p> <p>When graphing we start by finding the vertex.</p> <p>Vertex – opposite value under radical for x, same value outside radical for y.</p> <p>Next we follow a similar pattern to quadratic if no dilation has occurred.</p> <p>From the vertex over 1, up 1. Back to the vertex over 4, up 2. Back to the vertex over 9, up 3.</p> <p>If dilation has occurred, you will need to adjust your “over” value by multiplying with scale factor.</p>	<p><i>Rational: (Letters correspond to those in foldable!)</i></p> <p>**Horizontal Translation outside fraction, k value. (+) Up (-) Down</p> <p>Horizontal Asymptote: $y = k$ (value outside fraction.)</p> <p>The range is all real numbers except $y \neq k$</p> <p>**Vertical Translation in denominator with x. (+) Left (-) Right</p> <p>Vertical Asymptote: $x = h$ (opposite value with x)</p> <p>The domain is all real numbers except $x \neq h$</p> <p>Dilations: $a > 1$ Stretch $a < 1$ Shrink</p> <p>Reflections: When a is positive function decreases and branches are in Quadrants I and III. When a is negative function increases and branches are in Quadrants II and IV. (Reflection in x axis)</p>
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Special Relationships:

<p><i>Direct Variation:</i></p> <ul style="list-style-type: none"> • When x increases, y increases • When x decreases, y decreases <p>Follows the form: $y = kx$ Solve for k: $k = y/x$</p>	<p><i>Inverse Variation:</i></p> <ul style="list-style-type: none"> • When x increases, y decreases • When x decreases, y increases <p>Follows the form: $y = k / x$ Solve for k: $k = y(x)$</p>
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There are also videos under homework to help with concepts that you are struggling on.