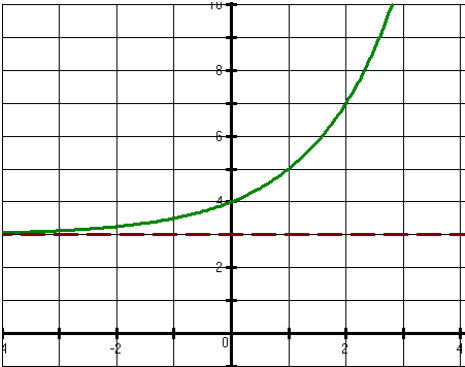
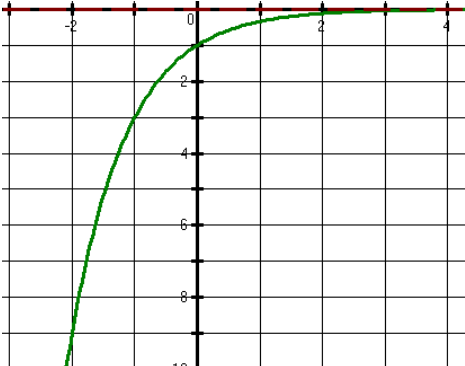


Study Guide

What you need to know and be able to do	Things to remember	Problem	Problem
<p align="center"><b>Describe Characteristics of Exponential Functions</b></p>	<ul style="list-style-type: none"> <li>• Interval of Inc/Dec</li> <li>• Domain</li> <li>• Range</li> <li>• Asymptote</li> <li>• <math>B \neq 1</math></li> <li>• Growth/Decay</li> <li>• X-int</li> <li>• Y-int</li> <li>• End behaviors</li> <li>• Rate of Change <math>\frac{y_2 - y_1}{x_2 - x_1}</math></li> </ul>	<p>1.</p> 	<p>Domain:                      Range:                      Asymptote:                      X-int:                      Y-int:                      Int. of Increase or Decrease  <math>B \neq 1</math>                      Growth or Decay                      End Behaviors:                       Rate of Change from <math>0 &lt; x &lt; 2</math></p>
		<p>2.</p> 	<p>Domain:                      Range:                      Asymptote:                      X-int:                      Y-int:                      Int. of Increase or Decrease  <math>B \neq 1</math>                      Growth or Decay                      End Behaviors:                       Rate of Change from <math>-2 &lt; x &lt; 0</math></p>
<p align="center"><b>Identify Transformations of Exponential Functions</b></p>	<ul style="list-style-type: none"> <li>• Describe the transformations on the parent function <math>y = 2^x</math></li> </ul>	<p>3. <math>y = -2(2)^{x-3}</math></p>	<p>4. <math>y = \frac{1}{3}(2)^x + 8</math></p>
	<ul style="list-style-type: none"> <li>• Write the equation for the function <math>y = 3^x</math> with given transformations</li> </ul>	<p>5. Vertically compress by a factor of <math>\frac{1}{3}</math>, shift left 3, and shift down 8</p>	<p>6. Reflect across the x-axis, vertically stretch by a factor 5, and shift up 7</p>

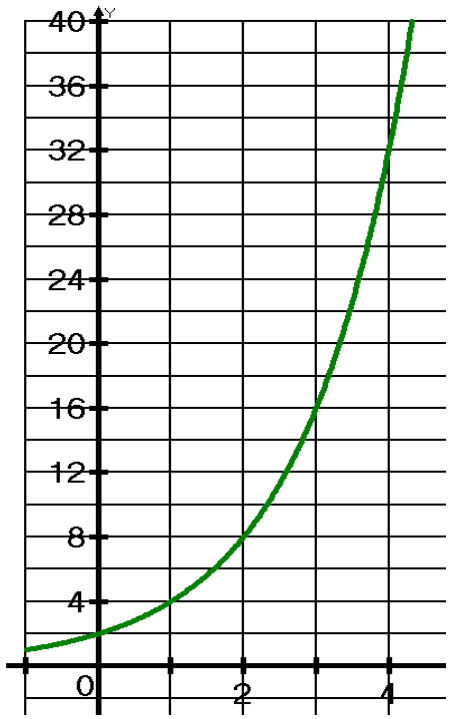
**Study Guide**

<p><b>Graph Exponential Functions</b></p>	<ul style="list-style-type: none"> <li>• Use -2, -1, 0, 1, 2 for the x-values</li> <li>• Graph the asymptote</li> </ul>	<p>7. <math>f(x) = -2\left(\frac{1}{2}\right)^x + 5</math></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">x</th> <th>f(x)</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	x	f(x)													
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<p>8. <math>g(x) = (3)^{x+2}</math></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">x</th> <th>f(x)</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </tbody> </table>	x	f(x)															
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<p><b>Comparing exponential characteristics</b></p>	<ul style="list-style-type: none"> <li>• Compare y-intercepts</li> <li>• Compare rates of change</li> </ul>	<p><b><u>Use the graphs from Problems 7 and 8</u></b></p>															
		<p>9. Which function has a greater rate of change from <math>0 \leq x \leq 2</math>? Why?</p>	<p>10. Which function has a lower y-intercept? Why?</p>														
<p><b>Solve Exponential Functions</b></p>	<ul style="list-style-type: none"> <li>• Isolate the base</li> <li>• Create like bases</li> </ul>	<p>11. <math>7^{x-9} = 49^{2x-3}</math></p>	<p>12. <math>64^{3x+5} = 1024^x</math></p>														
		<p>13. <math>6^{x-3} + 5 = 41</math></p>	<p>14. <math>8^{3x-1} - 3 &lt; 13</math></p>														

**Study Guide**

<p><b>Create and Use Exponential Functions from word problems and tables</b></p>	<ul style="list-style-type: none"> <li>• Find your initial value 'a' (<math>x = 0</math>)</li> <li>• Calculate your rate 'b'</li> <li>• If there are percentages, it is either <math>(1 + r)</math> or <math>(1 - r)</math></li> </ul>	<p>15. The population of Marietta in 2003 was estimated to be 35,000 people with a rate of increase of about 24%.</p> <p>a. Write an equation to represent the population of Marietta.</p> <p>b. Use your equation to estimate the population in 2015 to the nearest hundred people.</p>	<p>16. A certain bacteria that is growing on your kitchen counter doubles every 5 minutes. Assuming that there was only 1 bacteria in the beginning, how many bacteria would there be after 2 hours?</p>								
	<p>17. Chyna invests \$300 at a bank that offers a rate of 5% compounded quarterly.</p> <p>a. Write an equation to model the amount of money in Chyna's bank account.</p> <p>b. How much money will Chyna have in 4 years?</p>	<p>18. Caleb bought a new car at a cost of \$25,000. The value of the car decreases about 25% every 2 years.</p> <p>a. How much will his car be worth about 2 years?</p> <p>b. How much will his car be worth after 10 years?</p>									
	<p>19. Tina and her friends are having a party. The amount of people that know about the party throughout the week is shown in the table below.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Number of Days</th> <th>Number of People</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">18</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">54</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">162</td> </tr> </tbody> </table>	Number of Days	Number of People	0	6	1	18	2	54	3	162
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Study Guide

<p><b>Create and Use Geometric Sequences</b></p>	<ul style="list-style-type: none"> <li>• <i>Recursive Rule:</i> <math>a_n = r * a_{n-1}</math></li> <li>• <i>Explicit/Closed Rule:</i> <math>a_n = a_1(r)^{n-1}</math></li> </ul>	<p>20. Given the sequence below: 152, 76, 38, ...</p> <ol style="list-style-type: none"> <li>Use the recursive rule to find the 5<sup>th</sup> term</li> <li>Create the closed formula for the sequence.</li> <li>Use the explicit formula to find the 8<sup>th</sup> term</li> </ol>	<p>21. Given <math>a_1 = -2</math>   <math>a_n = 2a_{n-1}</math></p> <ol style="list-style-type: none"> <li>Find the first 5 terms of the sequence.</li> <li>Create the explicit formula.</li> <li>Calculate the 8<sup>th</sup> and 10<sup>th</sup> terms.</li> </ol>
<p><b>Compare Exponential functions in different forms</b></p>	<ul style="list-style-type: none"> <li>• <i>Find the characteristics of each function in its own form. Use those characteristics to compare</i></li> <li>• <i>Y-intercepts occur where <math>x = 0</math></i></li> <li>• <i>Rate of change requires 2 points to plug into the slope formula</i></li> <li>• <i>Greater rate of change is the magnitude of the number, not the sign</i></li> </ul>	<p><b>F(x) is represented by the graph below</b></p>  <p><b>G(x) is represented by the equation</b> <math>G(x) = 1(3)^x</math></p>	<p>What is the y-intercept of f(x)?</p> <p>What is the y-intercept of g(x)?</p> <p>Which function has a lower y-intercept?</p> <p>What is the rate of change of f(x) for <math>0 \leq x \leq 3</math>?</p> <p>What is the rate of change for G(x) for <math>0 \leq x \leq 3</math>?</p> <p>Which function has the greater rate of increase for <math>0 \leq x \leq 3</math>?</p>