Name: _____Date: _____

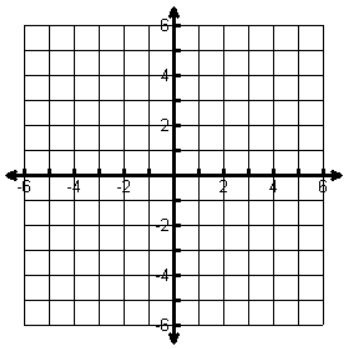
Use the following to review for you test. Work the Practice Problems on a separate sheet of paper.

What you need to know & be able to do	Things to remember	Problem	Problem
Arithmetic Sequences	• Gives the <u>First Term</u> • <u>Adding or Subtracting</u> to get to the next term • Explicit: • $a_n = a_1 + d(n-1)$ • Recursive: • $a_n = a_{n-1} + d$	1. Write the explicit and recursive rules for the following sequence -5, 2, 9, 16, … 2. Find the 10th term	3. Write the explicit rule for the following sequence -15, -13, -11, -9, … 4. 7 is the ____th term of the sequence
Geometic Sequences	• Gives the <u>First Term</u> • <u>Multiplying or Dividing</u> to get to the next term • Explicit • $a_n = a_1(r)^{n-1}$ • Recursive • $a_n = a_{n-1}(r)$	5. Write the explicit and recursive rules for the following sequence 3, 6, 12, 24, 48, … 6. Find the 15th term	7. Hillgrove has 324 kids that show up to try out for baseball on the first day. If a third get cut each day, write a sequence for the scenario. 8. How many cuts will it take for there to be 12 kids remaining?
Solving Exponential Equations	• Must have SAME base • Set exponents = (don't forget to distribute) • Solve for x	9. $5^{3x+1} = 5^{x-9}$	10. $3^{x-8} = 9^{x}$
		11. $4^{3x} = 8^{x+1}$	12. $4^{4x+8} = \left(\frac{1}{4}\right)^{x-18}$

<table>
<tr>
<td>Characteristics of Functions</td>
<td>$f(x) = a(b)^{x-h} + k$

• Locate the asymptote (k)
• Use your calculator to find 5 good points
• Sketch</td>
<td colspan="2">13. Graph the funtion
$f(x) = 2^x - 2$

Asymptote: _____

  </td>
</tr>
<tr>
<td>Exponential Models</td>
<td>Gives the <u>Starting Value</u>

• $y = ab^x$</td>
<td>14. Write an equation for the chart.

<table>
<tr><td>x</td><td>0</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>y</td><td>2</td><td>8</td><td>32</td><td>128</td></tr>
</table>

If the table represents a bee population and a bee house only holds 10,000 bees, how many days will it be before they need another house?</td>
<td>15. The temperature in Georgia has been crazy! Today it was a high of 80 and every hour the temperature was 80% of the previous amount. Write an equation to represent the temperature.

What will the temperature be 5 hours later?</td>
</tr>
<tr>
<td>Growth and Decay Models</td>
<td>• Growth: $y = P(1+r)^x$

• Decay: $y = P(1-r)^x$

• Factor: whole parentheses

• Rate: Percent</td>
<td>16. The population for Powder Springs in 2000 was 25,000. Since then, the population has grown at a rate of 3.2% each year. Write an equation to represent the population of Powder Springs since 2000.

According to the equation, what will the population be in the year 2016?</td>
<td>17. Mr. Gossett is a machinist. He bought some new machinery for about $125,000. If the machinery depreciates at the rate of 15% per year, what is the value of the machinery at the end of 10 years?</td>
</tr>
<tr>
<td>Compound Interest</td>
<td>• $A = P\left(1+\frac{r}{n}\right)^{nt}$
• Annually = 1
• Biannually = 2
• Quarterly = 4
• Monthly = 12
• Weekly = 52
• Daily = 365</td>
<td>18. $20,000 is invested at a rate of 3% and is compounded annually.

Equation:

How much money will there be in the account after 8 years?</td>
<td>19. $27,000 is invested at a rate of 3.75% and is compounded quarterly.

Equation:

How much money will there be in 3 years?</td>
</tr>
</table>