**Honors Math 3** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Unit 3 Review Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| 1. a) What are the zeros and their multiplicities for $16x^{3}+40x^{2}+16x?$

 b) What is the end behavior of the graph for this polynomial? c) What kind of polynomial is $16x^{3}+40x^{2}+16x?$ according to the number of terms and degree? How many roots should it have? (Hint: look at its degree!) |
| 1. http://www.compuhigh.com/demo/precalculus/lesson02_files/16.gifa) Write the polynomial of the given graph $f(x)$, including the correct multiplicities and leading coefficient.

 b) Suppose the graph represents a walker’s speedover time. What is the practical domain and range? |
| 1. Write a 4th degree polynomial with roots at x = 2i and x = $\sqrt{3}$.
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| 1. Expand $\left(3x-2\right)^{4}$.
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| 1. Use the Rational Roots Theorem to find possible rational roots of $f\left(x\right)=2x^{4}-9x^{2}+7$. Then, use the Remainder Theorem to find which one actually is a root of the polynomial.
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| 1. Write $y=2x\left(x+4\right)^{2}$ in standard form.
 | 1. Which type of function best models the data in the chart below? A linear, quadratic, cubic, or quartic function?

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| **x** | -2 | -1 | 0 | 1 |
| **y** | -6 | -2 | 1 | 4 |

 How do you know? What should y equal when x=5? |
| 1. A metal worker wants to make an open box from a 14 in x 18 in sheet of metal by cutting equal squares from each corner.
2. Write a function for the volume of the box.
3. What are the local maximum and local minimum?
4. Find the maximum volume of the box and the side length of the cut out squares that generates that volume.
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| 1. Prove that the binomial $x+3$ is a factor of $2x^{3}+8x^{2}+6x$. Then, find all the other factors of the function.
 |
| 1. Divide.

  Is $x+2$ a factor of $2x^{4}+6x^{3}+5x-6$? | 1. Divide.

 $\frac{3x^{3}+26x^{2}+56x+35}{3x+5}$Is 3x + 5 a factor of the polynomial? |