**Senior final Exam Review 2015**

Open Response Practice (**25pts**)

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| Graphing Cubic Functions |  |
| 1. Use your knowledge of the characteristics of cubic functions to answer the questions about the graph of the equation below.

$$y= x(x-7)(x+3)$$1. What is the end behavior of the function? Explain how you know.
2. What are the$ x$-intercepts of the function? Show or explain your answer.
3. What is the $y$-intercept of the function? Show or explain your answer.
4. Sketch the graph of the equation on the coordinate grid provided.
 | 1. Use your knowledge of the characteristics of cubic functions to answer the questions about the graph of the equation below.

$$y=-x(x-10)(x+2)$$1. What is the end behavior of the function? Explain how you know.
2. What are the$ x$-intercepts of the function? Show or explain your answer.
3. What is the $y$-intercept of the function? Show or explain your answer.
4. Sketch the graph of the equation on the coordinate grid provided.
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| Dividing Polynomials |  |
| 1. Use your knowledge of polynomial long division to answer the following question. Note: Your answer will have a ***remainder***.

Divide $x^{2}+7x+15$ by$ x+4$. | 1. Use your knowledge of polynomial long division to answer the following question. Note: Your answer will have a ***remainder***.

Divide $x^{2}+6x+13$ by$ x-2$. |
| 1. Use your knowledge of polynomial long division to answer the following question. Note: Your answer will have a ***remainder***.

Divide $3x^{2}+3x-18$ by$ x+1$. | 1. Use your knowledge of polynomial long division to answer the following question. Note: Your answer will have a ***remainder***.

Divide $9x^{2}-7x-11$ by$ x-3$. |

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| Exponential Functions & Continuous Compounds |  |
| 1. For her quinceañera (15th birthday), Liana receives a total of $1000 from family and friends. She deposits $\frac{4}{5} $of the money into a savings account. The account has an interest rate of 4% ***compounded continuously***.
2. What is the *principal*?
3. Write an equation to model the future growth of the savings account.
4. How much money will be in the account in when Liana turns 25?
 | 1. Derek takes out two school loans at the start of his freshman year of college. The first is for $5000 and the second is a smaller loan of $1000, to help pay for books and supplies. Both loans have an interest rate of 6.8% ***compounded continuously***.
2. What is the *principal*?
3. Write an equation to model the future growth of the loan.
4. How much money will Derek owe at the end of his senior year?
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| 1. A truck cost $30,000 in the year 2005. For each year after 2005, the value of the truck was 12% less than the previous year.
2. Write an equation to model the depreciation of the truck’s value.
3. What will the value of the truck in the year 2020?
 | 1. A used car cost $18,000 in the year 2009. For each year after 2009, the value of the truck was 8% less than the previous year.
2. Write an equation to model the depreciation of the truck’s value.
3. What will the value of the truck in the year 2018?
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