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## Homework Problems

### Lecture 4

- List a social policy or environmental initiative that may have a logarithmic effect on the problem it attempts to address; what is a government initiative or a factor that may have an exponential effect?
- We learned on Tuesday that Steve is 25 years old and Craig is 15. They recently met Jenny whose is equal to  $\frac{(2C - S)^3}{\sqrt{25}}$   
In what year will...
  - The mean age of all 3 be equal to 25?
  - The median age of all 3 be equal to 25?
  - The mode age of the group be equal to 25?
- Graph the following equation:  $y = 3x^2 - 3x + 2$
- Imagine you are a policymaker studying income in the Puget Sound Region. How is the presence of Bill Gates and other Microsoft Millionaires likely to cause you a problem? What is one way to resolve it?
- Poverty has been growing at an alarming rate in Pleasantville. Every month the number of citizens in poverty is twice that of the month before. Sketch a graph comparing the month to the number of the poor.
- What is the *y-intercept* of the following equation?  
$$\frac{x - 7}{6y + 2x} = 4$$
- U.S. unemployment in July was 5.7%. In August, it was 6.1%. In the June, it was 5.5%. What must the unemployment rate be in September if the mean of the unemployment rate from June through September is no more than 5.5%? Assume that the population stays constant through the year.
- Calculate the mean, the median and the mode for the following set of fractions:  
$$\frac{3}{7}, \frac{9}{5}, \frac{2}{3}, \frac{5}{8}, \frac{2}{7}, \frac{1}{2}$$
- Solve for  $q$ :  $\frac{q^4}{16} = -q^3 - 4q^2$
- The factory manager has a wage that is based upon the wage of his/her employees and the factory's productivity. The manager makes twice the wage of the employee plus a dollar value that is equal to 20% of the number of units produced. Currently, the manager is paid \$18/hr. The employees work harder when they get paid more: they produce a number of units that is equivalent to 125% of the dollar amount of their wage. With this information, how much are the employees currently producing every hour and what is their wage?
- Without graphing the equation  $7 + 12x = 2x^2 + 3$ , identify the coordinates of its vertex.