Topics in Algebra, Trigonometry and Pre-Calculus

21st February 2010

Round-up Homework.

Instructions

Please note that the following questions relate to the following units:

- Q1 and Q2: Systems of inequalities.
- Q3 and Q4: Logorithms and Exponential functions.
- Q5 and Q6: Applications of Logorithms and Exponential functions.

1. Sketch the following region in the $xy-$plane: $\{(x,y)\,|\quad |x|<2 \text{and} |y|\geq 3\}$.
2. Sketch the following region in the $xy-$plane: $\{(x,y)\,|\,-2\leq y\leq x+2 \text{ and } y<5-x\}$.
3. Use all the properties of logarithms to evaluate (i.e. make it into a single expression) the following:
$$\log_2(6)-\log_2(15)+\log_2(20).$$
4. Find x such that $2^{5x-2}=15^{x+1}$.
5. If I invest \$1000 for 12 years at a compound interest rate of 15% then how much will my investment be worth?
6. A bottle of pop has temperature $T(t)$ (in Farenhiet) given by the following formula:
$$T(t)=44+28e^{-0.01663t}$$
, where t is the number of minutes the pop has been cooling. How long does it take for the bottle to reach $50^{\circ}F$?