Discussion Problems for Math 180

Tuesday, November 27, 2014

Review

1. Sketch a graph of the function $y = \dfrac{2x-1}{x-1}$, indicating any vertical or horizontal asymptotes.
2. Consider the parabola which is the graph of the equation $y = 8 - 4x - 4x^2$. Explain a series of transformations changing the parabola $y = x^2$ into this parabola. (For instance, "first move ..... units to the left, then...").
3. What is the domain of the function $\tan(x)$?

This time

4. Find $\lim\limits_{t\to 0} \dfrac{t^2-5t+6}{4t^2+t+1}$.
5. Find the following limits, if they exist. Justify your answers.
   (a) $\lim\limits_{x\to 0} x\sin\left(\dfrac{1}{x}\right)$
   (b) $\lim\limits_{x\to 0} \sin\left(\dfrac{1}{x}\right)$
   (c) $\lim\limits_{x\to \infty} x\sin(x)$
   (d) $\lim\limits_{x\to 0} \dfrac{1}{x^2}\sin\left(x^2\right)$
6. Sketch a graph of the function $f(x) = \dfrac{\sqrt{x^2+1}}{x}$, making sure to indicate the correct end behavior. Justify your answer.
7. What is $\lim\limits_{x\to 0} \dfrac{\sin(x)}{\sqrt{5x^3+2x^2}}$?