Discussion Problems for Math 180

Tuesday, February 3, 2015

Review

1. Simplify $\dfrac{e^{2x+1}}{2e \cdot e^{-x}}$.

2. What is $\arctan(x) + \arctan\left(\dfrac{1}{x}\right)$? *(Hint: Draw a triangle.)*

3. Simplify: $\dfrac{\dfrac{1}{(x+h)^2} - \dfrac{1}{x^2}}{h}$.

This time

4. What does it mean for a function $z(t)$ to have a horizontal asymptote?

5. What is $\dfrac{d}{dx}\left[x^5 - 4x^3 - 2\right]$?

6. What is $\dfrac{d}{dx}\left[x - \dfrac{3}{x^2}\right]$? *(Hint: Look at #3.)*

7. Given that $\dfrac{d}{dx}e^{kx} = ke^{kx}$ for any number k, what is $\dfrac{d}{dx}4^{x-1}$?

8. Which functions $f(x)$, if any, have $\dfrac{df}{dx} = 3x^2$?