

Honors Calc. I. Homework Set #1 Due 9/05/07 Name: \_\_\_\_\_

1. Complete the square of  $f(x) = 4x^2 - 8x + 1$ .

2. Prove that  $\frac{\sin(x+h) - \sin x}{h} = \sin x \left( \frac{\cos h - 1}{h} \right) + \cos x \left( \frac{\sin h}{h} \right)$   $h \neq 0$ .

3. Find  $A$  and  $\delta$  such that  $\alpha \sin(\omega x) - \beta \cos(\omega x) = A \sin(\omega x + \delta)$ , then use this result to solve  $\sin x - \cos x = \frac{1}{3}$ .

4. P.76, §2.2, #20: Guess the value of the limit of the function to within 6 decimal places by evaluating the function at values of  $x$  to the left and right of 16

$$\lim_{x \rightarrow 16} \frac{\sqrt{x} - 4}{x - 16}$$

5. Find the equation of the tangent line to the curve  $y = 3x^2$  at the point  $(5, 75)$ .