Name_____ No Calculators. Present neatly. Score_____.

1) Find an equation of the tangent line to the curve at the given point.

$$y = x + \tan x, \quad (\pi, \pi)$$

2)

If $H(\theta) = \theta \sin \theta$, find $H'(\theta)$ and $H''(\theta)$.

3)

For what values of x does the graph of $f(x) = x + 2 \sin x$ have a horizontal tangent?

4) Find the limit or explain why it does not exist.

$$\lim_{x \to \pi/4} \frac{1 - \tan x}{\sin x - \cos x}$$

Your work:

Name_____ No Calculators. Present neatly. Score_____.

1) Find an equation of the tangent line to the curve at the given point.

$$y = \sec x, \quad (\pi/3, 2)$$

2)

If $f(t) = \csc t$, find $f''(\pi/6)$.

3)

Find the points on the curve $y = (\cos x)/(2 + \sin x)$ at which the tangent is horizontal.

4) Find the limit or explain why it does not exist.

$$\lim_{x \to 1} \frac{\sin(x-1)}{x^2 + x - 2}$$

Your work: