PS 8 AP Calculus Due Friday 12/1
Complete this work on another sheet of paper. I am looking for organization

Academic Honesty Statement + Signature + Printed Name:

Consider the curve defined by the equation $y - \cos y = x - 1$ for $0 \le y \le 2\pi$.

a) Find $\frac{dy}{dx}$ in terms of y

b) Write an equation for each vertical tangent to the curve.

c) Find $\frac{d^2y}{dx^2}$ in terms of y.

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2. No Calculator

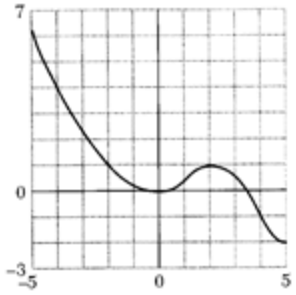
Let f be the function defined by $f(x) = -2 + \ln(x^2)$.

(a) For what real numbers x is f defined?

(b) Find the zeros of f.

(c) Write an equation for the line tangent to the graph of f at $x = 1$.

Graph of f



3.

Let $k(x)=f\left(e^{-x}\right)$

(a) Determine whether k is increasing, decreasing, or stationary at x = -1, x = 0, and x = 1. Justify your answers.

(b) Show that $x=-\ln 2$ is a stationary point of k and determine whether it corresponds to a local maxima or a local minima. Justify your answer.

(note: This textbook defines a stationary point to be:

x_0 is a staionary point of f if $f'(x_o)=0$