

Present neatly. Justify for full credit. No Calculators.

Name _____ Score _____ ~10 minutes / A

1. Find the value of b so that the line $y = x$ is tangent to the graph of $y = \log_b x$. [4 pts]
2. Find the equation of the tangent line to the graph of $y = \ln(5 - x^2)$ at $x = 2$. [4 pts]
3. Find the limit or explain why it does not exist. [2 pts]

$$\lim_{x \rightarrow e} \frac{1 - \ln x}{(x - e) \ln x}$$

Present neatly. Justify for full credit. No Calculators.

Name _____ Score _____ ~10 minutes / F

1. Find the value of k for which the graphs of $y = \sqrt{x} + k$ and $y = \ln x$ share a common tangent line at their point of intersection. [4 pts]
2. Find a point on the graph of $y = e^{3x}$ at which the tangent line passes through the origin. [4 pts]
3. Find the limit or explain why it does not exist. [2 pts]

$$\lim_{h \rightarrow 0} \frac{(1+h)^\pi - 1}{h}$$