

Read directions carefully and *show your work*. Partial credit will be assigned based upon the correctness, completeness, and clarity of your answers.

1. (4 pts) Consider $y(x) = e^e - \ln x + 3 \log_2 x - (e^2)^x - 7 \sin x + \cos(\pi)$, find $\frac{dy}{dx}$.

2. (6 pts) Consider $f(x) = x^3 - \ln x$. Is f concave up or down at $x = 1$?