

**SHOW ALL YOUR WORK. NO CREDITS FOR WNSWERS NOT SUPPORTED BY WORK.**

**Problem 1:** Find  $\frac{dy}{dx}$  for each of the following:

(a)  $y = e^{x \ln x}$

(b)  $y = \log_5(x \cdot 2^x)$

(c)  $y = \ln^2 \sqrt[4]{2x+1}$

**Problem 2:**

Find the slope of the line tangent to the graph of  $y^3 - x^2 y^2 = 4x$  at the point (1,2)

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**Problem 1:** Find  $\frac{dy}{dx}$  for each of the following:

(a)  $y = e^{x+\ln x}$

(b)  $y = \log_5 (x^2 \cdot 2^x)$

(c)  $y = \ln^3 \sqrt[3]{2x^2 + 1}$

**Problem 2:**

Find the slope of the line tangent to the graph of  $\ln(xy) + x = 4y$  at the point  $(2, 1/2)$ .

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**Problem 1:** Find  $\frac{dy}{dx}$  for each of the following:

(a)  $y = 4^{x \log x}$

(b)  $y = \log_6(xe^x)$

(c)  $y = \ln^5 \sqrt{1-x^3}$

**Problem 2:**

Find the slope of the line tangent to the graph of  $\ln(xy) + y = 1$  at the point (1,1)