

Quiz 2

Name _____

Recitation (Circle)

1:30P

2:30P

3:30P

4:30P

Use the techniques learned in class to do the following problems and show your work!!!

Problem 1: (4 points) Determine the antiderivative of the following function:

$$y(x) = 4e^x - \frac{x}{x^4} + \pi x^{-1}$$

$$\begin{aligned} Y(x) &= \int y(x) dx = \int 4e^x - \frac{x}{x^4} + \pi x^{-1} dx \\ &= \int 4e^x - x^{-3} + \pi \frac{1}{x} dx \\ &= 4 \int e^x dx - \int x^{-3} dx + \pi \int \frac{1}{x} dx \\ &= 4e^x - \frac{x^{-2}}{-2} + \pi \ln|x| + C \end{aligned}$$

Problem 2: (6 points) Find $y(x)$ given that $y'(x) = e^x - x^5$, $y'(0) = 1$.

$$\begin{aligned} y(x) &= \int y'(x) dx = \int e^x - x^5 dx \\ &= \int e^x dx - \int x^5 dx \end{aligned}$$

$$y(x) = e^x - \frac{x^6}{6} + C$$

$$1 = e^0 - 0 + C$$

$$C = 0$$

$$y(x) = e^x - \frac{x^6}{6}$$