PRACTICE EXAM 1

1) Integrate $\int_{x=0}^{x=2} \frac{dx}{(x^2+1)^{3/2}}$.

2) $\int \frac{dx}{x(x-z)(x+z)}$.

3) Solve $\dfrac{dy}{dx} = x^2 y^3 \qquad y(0) = 1.$

4) Find the arc length of $\dfrac{e^x + e^{-x}}{2}$ from $x = -1$ to $x = 1$.

5) a) use L'Hôpital to find $\lim_{x \to \infty} \frac{x^2}{e^x}$.

b) find $\lim_{x \to 0^+} (\frac{1}{x} - \frac{1}{\sin x})$ by L'Hôpital.