MATH 5B - Single Variable Calculus II — Spring 2019

§6.2 Exponential Functions & their Derivatives

In-class Activity 6.2

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Activity 1:

(a) Sove for x: $3^x = 0$

(b) $\lim_{x\to\infty}(5^{-x}-1)$

(c) Sketch: $y = 3^{-x}+1$

Activity 2:

Find: $\lim_{x\to\infty}\dfrac{e^{2x}}{e^{2x}+1}$

Activity 3:

Given that $y = e^{x^3}$, what is the equation of the tangent line at $P = (0,1)$?

Activity 4:

If $y = e^{-4x}\sin(5x)$, what is y'?

Activity 5:

What is the absolute maximum of $f(x) = xe^{-x}$?

Activity 6:

Use the "curve sketching information" (CSI Lines) of f' and f'' to sketch the graph of $f(x) = e^{1/x}$?

Activity 7:

(a) Evaluate: $\int x^2 e^{x^3}\, dx$

(b) Find the area under the curve $y = e^{-3x}$ from $x = 0$ to $x = 1$.