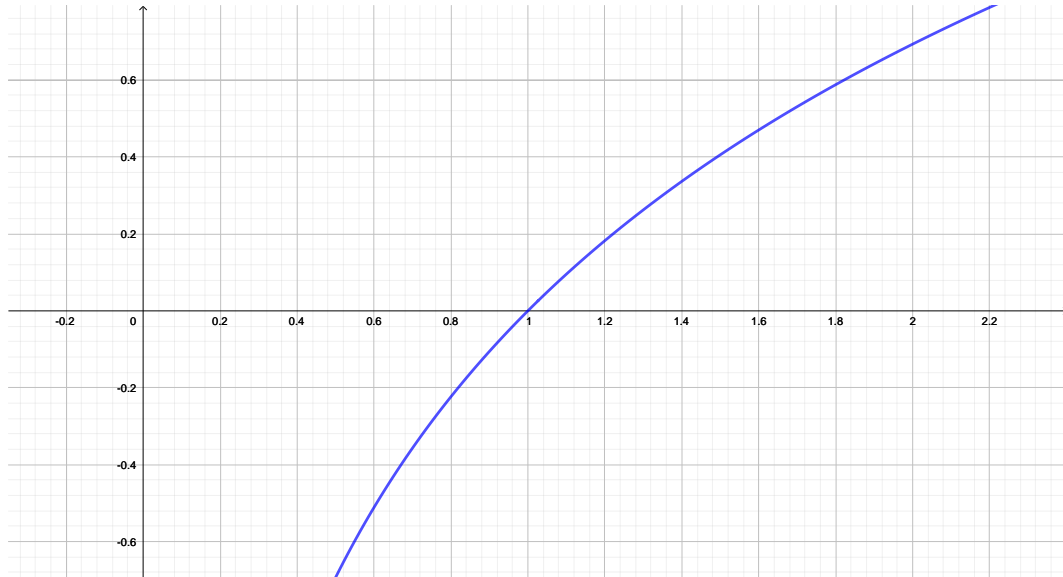


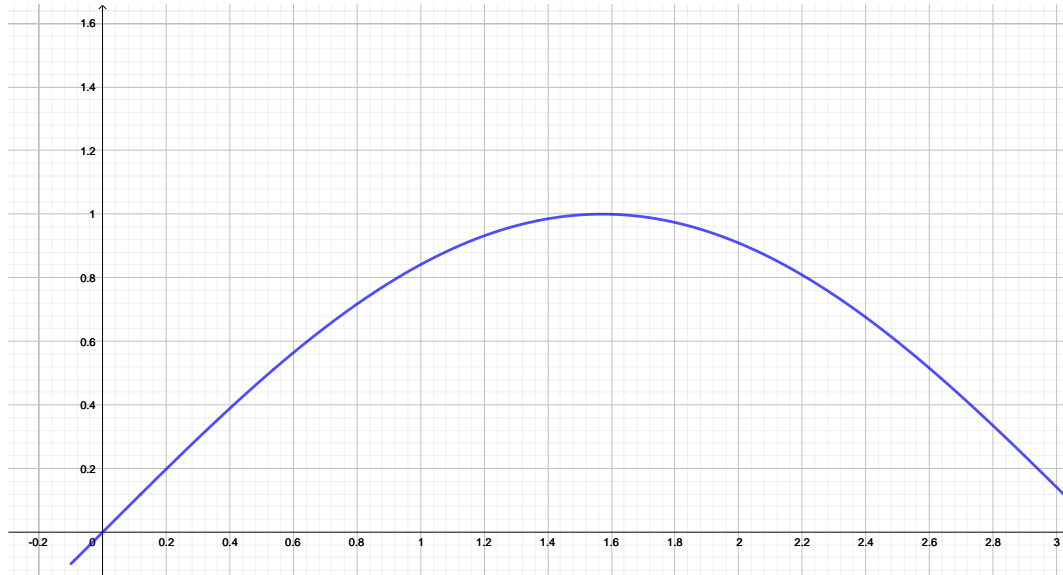
In-class Activity 10

Question 1 Below is the graph of $f(x) = \ln(x)$.



- Find $f'(1)$.
- Find the linearization of f around the point $a = 1$.
- Use the linearization above to give an approximation of $\ln(1.2)$.
- Can you give a geometric meaning to what you did above?

Question 2 Below is the graph of $f(x) = \sin(x)$.



- Find $f'(0)$.
- Find the linearization of f around the point $a = 0$.
- Use the linearization above to give an approximation of $\sin(0.02)$.
- Use the linearization above to give an approximation of $\sin(1)$ and $\sin(1.6)$. Do you think your answer is meaningful? Explain why or why not.

Question 3 Using an appropriate linearization, find an approximation of $\sqrt[4]{1.004}$.

Question 4 Using an appropriate linearization, find an approximation of $\sqrt[8]{e}$.

Question 5

For the following functions, find $f''(x)$.

- $f(x) = \sqrt{x^2 - 1}$

- $f(x) = \cos(x^3)$

- $f(x) = x^x$