

Vocabulary/Definitions

- Tangent line approximation
- Local linearization
- Error in the tangent line approximation
- $\lim_{x \rightarrow a} \frac{E(x)}{(x-a)}$
- What $E(x)$ is approximately equal to near $x = a$

Understand

1. What is the tangent line approximation to $f(x) = \cos(x)$ near $x = \pi/3$?

2. Find a formula for the error $E(x)$ in your approximation in (1).

3. For your $E(x)$, fill in the following table:

x	$\frac{E(x)}{(x-\pi/3)}$	$\frac{E(x)}{(x-\pi/3)^2}$
$\frac{\pi}{3} + 0.1$		
$\frac{\pi}{3} + 0.01$		
$\frac{\pi}{3} + 0.001$		
$\frac{\pi}{3} + 0.0001$		

How does this illustrate what you found in the Vocabulary/Definitions section of this assignment?