

AP:

Homework

9/6-9/15

due: Thursday: review: limits

Friday: review: continuity

Monday: read pp. 88-90

1. Find the slope of the tangent line to the curve $y = x^3$ at the point (1,1). Write an equation of the tangent line to the curve at this point.
2. Find the slope of the tangent line to the curve $y = x^3$ any point, $x = a$, on the curve.

Tuesday: read pp. 99-101

pg. 105 / #5, 6, 7

Wednesday:

1. Let f be a function with domain the set of all real numbers and having the following two properties: (a) $f(x + y) = f(x)f(y)$ for all real numbers x and y
(b) $\lim_{h \rightarrow 0} \frac{f(h)-1}{h} = k$, where k is a nonzero real number. Use the properties and a definition of the derivative to show that $f'(x)$ exists for all real numbers x .
2. Let f be a function that is everywhere differentiable and that has the following properties: (i) $f(x + h) = \frac{f(x)+f(h)}{f(-x)+f(-h)}$ for all real numbers h and x . (ii) $f(x) > 0$ for all real numbers x . (iii) $f'(0) = -1$.
 - a. Find the value of $f(0)$.
 - b. Show that $f(-x) = \frac{1}{f(x)}$ for all real numbers x .
 - c. Using part (b), show that $f(x + h) = f(x)f(h)$ for all real numbers h and x .
 - d. Using a definition of derivative, find $f'(x)$ in terms of $f(x)$.

Thursday:

1. pg. 105 / #6, 7
2. Using the alternate definition, find $f'(2)$ if $f(x) = x^3 - 5x^2 + 2x + 1$.

Friday: read pp. 16-119

1. pg. 124 / #1, 2, 3, 4, 5, 6
2. Find y' : a. $y = x$ b. $y = x^4 - 7x^3 + 2x^2 + 15$ c. $y = 8 - x$

on: Friday: quiz

due: Monday: read pp. 119-122

1. pg. 124 / #15, 17, 19, 21, 24, 29
2. Find y' : a. $y = x^2(x^3 - 1)$ b. $y = \frac{5}{x^4}$ c. $y = x^2(x + 5 + \frac{1}{x})$ d. $y = \frac{12}{x} - \frac{4}{x^3} + \frac{1}{x^4}$
3. If $f(x) = \frac{x}{1-x}$, find $f'(x)$.
4. If $y = \frac{1-x}{x-1}$, find $\frac{dy}{dx}$.