

MATH 151 Homework 11

Due 2/22

Read Section 3.3.

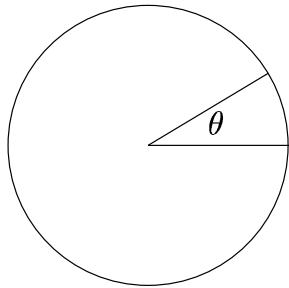
Do Section 3.1 Exercise 16 (note that you're not using differentiation rules for this problem)

Do Section 3.2 Exercises 44 and 45

Do Section 3.3 Exercises 2, 3, 4, 5, 53, 65

Also, do the following exercises.

- SF32.** Suppose you cut a slice of pizza from a circular pizza of radius r , as shown. As you change the size of the angle θ , you change the area of the slice, $A = \frac{1}{2}r^2\theta$. Then the rate of change of area is A' . Compute A' in this situation.



- SF33.** (a) Find the equation of the tangent line to the graph of $f(x) = x^3$ at the point where $x = 2$.
- (b) Graph the tangent line and the function on the same axes. If the tangent line is used to estimate values of the function, will the estimates be overestimates or underestimates?
- SF34.** For each of the following, determine if the derivative rules from section 3.3 apply. If they do apply, name all the derivative rules that apply. If they don't apply, explain why not.
- (a) $f(x) = (x + 3)^{1/2}$
- (b) $g(x) = x^\pi - x^{-\pi}$
- (c) $h(x) = \pi^x$
- (d) $k(x) = 3x^2 + 4$
- SF35.** Give an example of a function g whose derivative is $g'(x) = 2x$ and whose graph has no x -intercepts.