



Quiz 2.1 – Derivatives of Quadratic Functions

1. (1 point) —alfredLibrary/AUCI/chapter2/lesson1/quiz/TFquestion1pet.pg—

For each statement, type T for true or F for false. Assume that the given derivatives exist. Notice that you have a limited number of attempts.

___ (a) The derivative of a function at a point P is the slope of the tangent line at P .

___ (b) The derivative of a function at a point P is the instantaneous rate of change of the function at P .

___ (c) The average rate of change of a function between two points P and Q is the slope of the secant line between P and Q .

___ (d) The derivative of a function at a point P can be approximated by the average rate of change between P and a nearby point Q .

___ (e) The derivative of a function at a point P can be found by "sneaking up" on the slope of the tangent line using slopes of secant lines.

2. (1 point) —alfredLibrary/AUCI/chapter2/lesson1/table.pg—

For the function $f(x) = 2x^2 - 2x + 8$, compute the average rates of change for points closer and closer to and on both sides of $x_0 = -3$.

(HINT: $\frac{\Delta y}{\Delta x} = \frac{f(x) - f(-3)}{x - (-3)}$. Use the table feature on your

calculator.)

x	-3.1	-3.01	-3.001	→	-3	←	-2.999	-2.99
$\frac{\Delta y}{\Delta x}$	_____	_____	_____	→	???	←	_____	_____

Estimate $f'(-3) =$ _____

3. (1 point) —alfredLibrary/AUCI/chapter2/lesson1/quiz/question2pet.pg—

Let $f(x) = -5x^2 - 8x - 2$.

(a) What is the slope of the tangent line to the graph of f at $x = -5$? (Use the formula for the derivative of a quadratic.)

$f'(-5) =$ _____

(b) At which x does f have a maximum value (highest point)?

$x =$ _____

(c) What is the maximum value of f ?

$y =$ _____

(d) What is the slope of the tangent line at the maximum value?

Slope = _____