

In the space provided, please write your solution to the following exercises. Show all of your work and not just the final conclusion. Remember to use good notation. The majority of the credit you receive will be based on the completeness and the clarity of your responses.

1. With an initial deposit of \$100, the balance in a bank account after t years is $f(t) = 100(1.08)^t$ dollars.

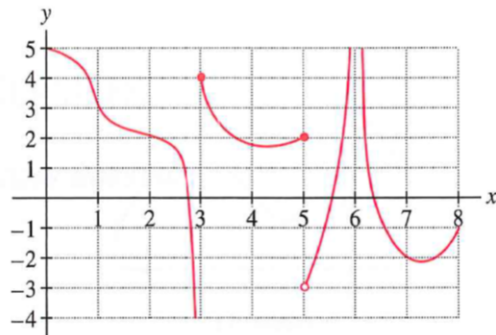
(a) (2 points) What are the units of the rate of change of $f(t)$?

(b) (2 points) Find the average rate of change over $[0, 1]$.

(c) (2 points) Use the table of average rates of change below to estimate the instantaneous rate of change at $t = 0.5$.

$[a, b]$	$f_{ARC}[a, b]$	$[a, b]$	$f_{ARC}[a, b]$
$[0.25, 0.5]$	7.922	$[0.5, 0.75]$	8.075
$[0.4, 0.5]$	7.967	$[0.5, 0.6]$	8.029
$[0.49, 0.5]$	7.995	$[0.5, 0.51]$	8.001
$[0.499, 0.5]$	7.998	$[0.5, 0.501]$	7.998

2. (4 points) Determine the one-sided limits of the function $f(x)$ in the figure below, at the points $c = 3, 5$.



Graph of $f(x)$

Bonus (2 points): Using the limit definition, verify that $\lim_{x \rightarrow 3} (5x + 2) = 17$.