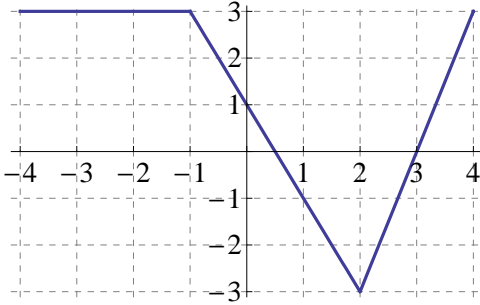


Quiz 3 (20 points in total)
 Section 201/202 (circle one)
 Name:

1. [14 points] Given below is a graph of a function $f(x)$ and a table for a function $g(x)$.
 Given answers for the following or write "Does not exist". Each problem is worth 2 points.



x	-3	-2	-1	0	1	2	3
$g(x)$	-2	-3	-2	-1	1	3	2
$g'(x)$	-2	0	1	3	2	0.5	-1

- a) $h(x) = \frac{g(x)}{f(x)}$. Find $h'(-3)$.
- b) $k(x) = 3f(x) - g(x)$. Find $k'(2)$
- c) $q(x) = f(x)g(x)$. Find $q'(-2)$
- d) $a(x) = g(-f(x))$. Find $a'(1)$
- e) $l(x) = e^{2f(x)}$. Find $l'(3)$
- f) $p(x) = \sin\left(\frac{\pi}{f(x)}\right)$. Find $p'(1)$

g) $t(x) = \ln((e^{g(x)})^2)$. Find $t'(-2)$

2. [6 points] “Winning the war on poverty” has been described cynically as slowing the rate at which people are slipping below the poverty line. Let N be the number of people below the poverty line at time t , answer the following questions.

(1) If N is increasing at a faster and faster rate.

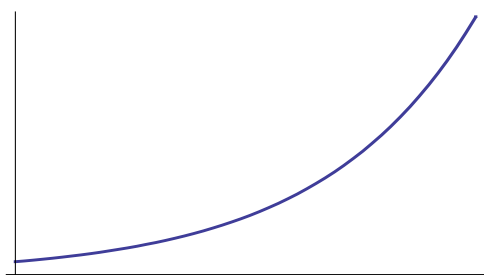
Is $N'(t)$ increasing, decreasing or neither? **Answer:**

Which is a possible graph for N ? If none is possible, write None. **Answer:**

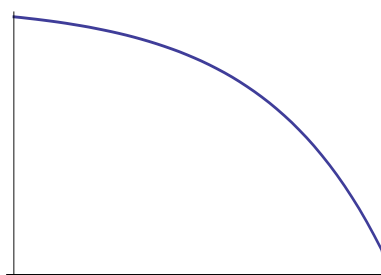
(1) If N is decreasing at a slower and slower rate.

Is $N'(t)$ increasing, decreasing or neither? **Answer:**

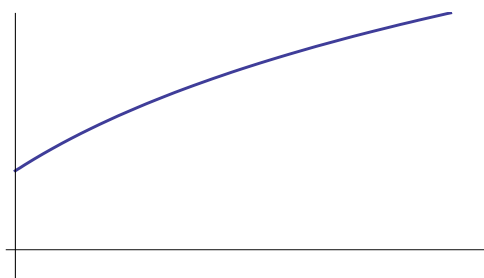
Which is a possible graph for N ? If none is possible, write None. **Answer:**



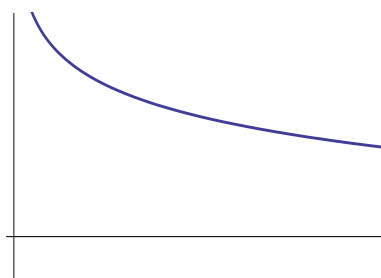
(a)



(b)



(c)



(d)