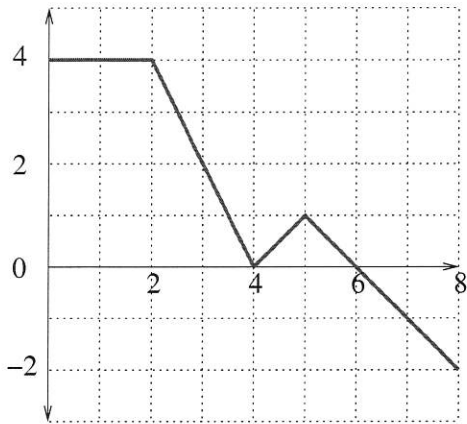


Name: _____

1. [15 points] Let $g(x) = \int_0^x f(t) dt$, where $f(t)$ is the function whose graph is shown below. (a-e are 2 points each, f is 5 points.)



a. Evaluate $g(8)$. $= 8 + 4 + 1 - 2 = 11$

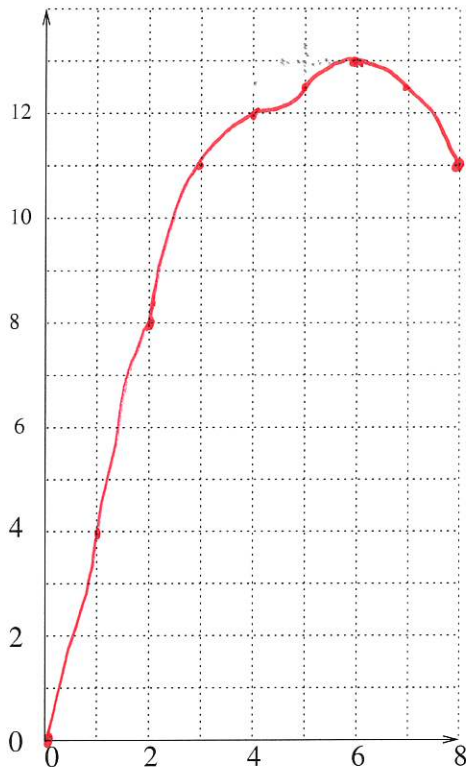
b. On what interval is $g(x)$ increasing? $(0, 6)$

c. On what interval is $g(x)$ decreasing? $(6, 8)$

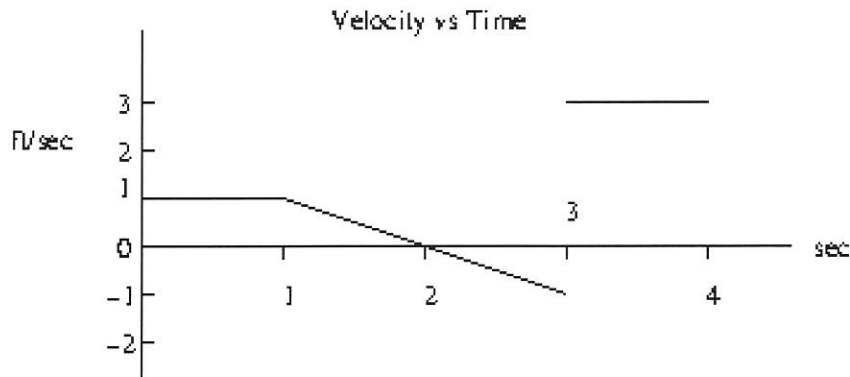
d. For what value of x does $g(x)$ have a local maximum? $x = 6$

e. On $(2, 4)$ is $g(x)$ concave up or concave down? *down since $g''(x) = f'(x) = -2$ on $(2, 4)$.*

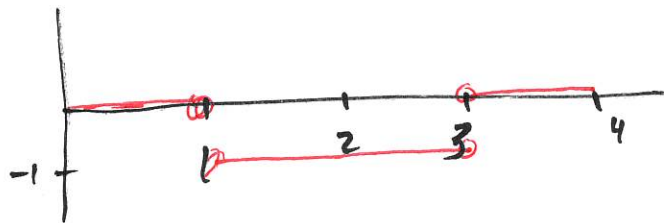
f. Sketch a rough graph of $g(x)$.



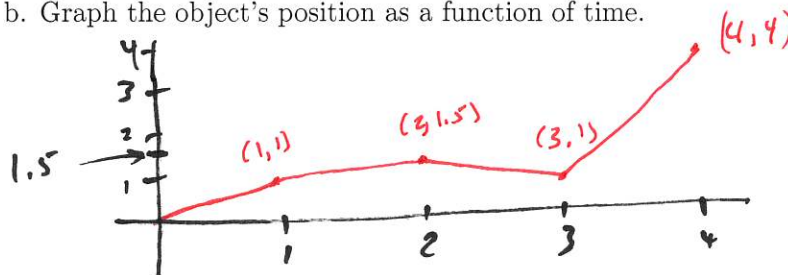
2. [20=3+9+4+4 points] An object's velocity as a function of time is given by the graph below.



- a. Graph the object's acceleration as a function of time.



- b. Graph the object's position as a function of time.



- c. Where is the object relative to its starting point after 4 seconds?

4 ft in positive direction.

- d. What is the total number of feet traveled by the object during the 4 seconds?

$$\int_0^4 |v(t)| dt = 1 + \frac{1}{2} + \frac{1}{2} + 3 = 5 \text{ ft.}$$