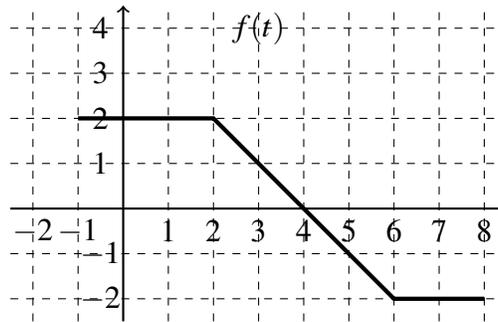


Name: _____

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There are 25 points possible on this quiz. No aids (book, calculator, etc.) are permitted. **Show all work for full credit.**

1. [4 points] Define $G(x) = \int_0^x f(t) dt$ where the graph of $f(t)$ is drawn below.



- a. Determine $G(4)$.

- b. Does $G(x)$ have a maximum on the interval $[0, 8]$? Explain your answer.

2. [6 points] Use the Fundamental Theorem of Calculus (Part 1) to find each derivative.

a. $\frac{d}{dx} \left(\int_1^x \ln(t) dt \right)$

b. $\frac{d}{dx} \left(\int_{\cos(x)}^1 \sqrt{1-t^2} dt \right)$

3. [8 points] Evaluate each definite integral using the Fundamental Theorem of Calculus Part 2.

a. $\int_1^{25} \frac{2}{\sqrt{x}} dx$

b. $\int_0^{\pi/2} (5 - 3 \sin(x)) dx$

4. [7 points] A ball is thrown upward from an initial height of 2 m at an initial speed of 20 m/s . Acceleration resulting from gravity is -9.8 m/s^2 . (Just to be clear, we are assuming $a(t) = -9.8$ is the equation modeling the acceleration of the ball.)

a. Solve for $v(t)$, the velocity of the ball t seconds after it is thrown into the air.

b. Solve for $h(t)$, the height of the ball t seconds after it is thrown into the air.