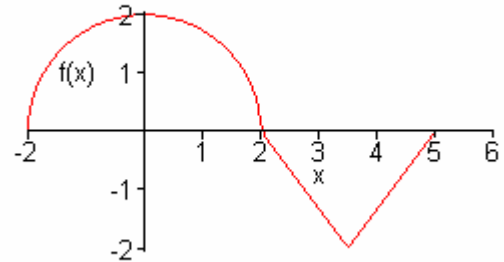


I. To the right you are given the graph of a function $f(x)$. Use the graph to find the indicated derivatives and integrals. You may assume the graph is made up of standard geometrical objects (such as half circles and triangles). (1 point each, 4 total)

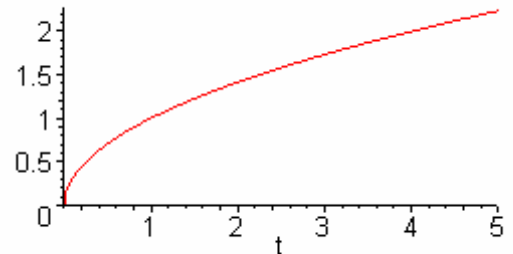
- (a) $f'(0) = \underline{\hspace{2cm}}$ (b) $\int_{-2}^2 f(x)dx = \underline{\hspace{2cm}}$
 (c) $\int_2^5 f(x)dx = \underline{\hspace{2cm}}$ (d) $\int_{-2}^5 f(x)dx = \underline{\hspace{2cm}}$

Graph of $f(x)$



II. A particle moves along a straight path with velocity function $v(t) = \sqrt{t}$ where t is in seconds and $v(t)$ is in inches per second. Below you are given a graph of $v(t)$. Please answer the following questions: (2 points each, 4 total)

- (a) What is the acceleration of the particle at time $t = 2$ seconds. Represent this number graphically on the graph of $v(t)$.



- (b) What is the net distance traveled by the particle from $t = 1$ to $t = 4$ seconds. Represent this number graphically on the graph of $v(t)$.

III. Find the indicated integrals. Neatly show all work. Clearly indicate any substitutions you may make. (3 points each, 12 total)

1. $\int_0^1 x^3 - 2x + 1 \, dx$

2. $\int \frac{t-1}{t} \, dt$

3. $\int xe^{x^2} \, dx$

3. $\int \cos^4(x)\sin(x) \, dx$