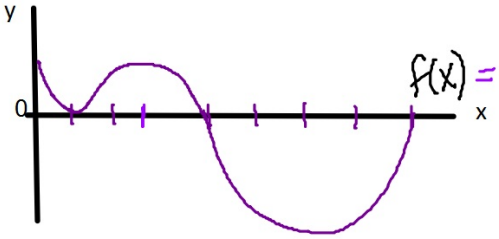
5.4 cont. Analyzing Antiderivatives Graphically

Ex: The graph of a continuous function f with domain [0, 8] is shown below. Let h be the function defined by $h(x) = \int_1^x f(t)\,dt$



a. Find h(1).

$h(1) = \int_1^1 f(t)\,dt = 0$

b. Is h(0) positive or negative? Justify your answer.

$h(0) = \int_1^0 f(t)\,dt = -\int_0^1 f(t)\,dt = -(\text{positive})$ Negative

c. Find the value of x for which h(x) is a maximum.

@ x = 4

d. Find the value of x for which h(x) is a minimum.

$h(0) = \int_1^0 f(t)\,dt$ $h(8) = \int_1^8 f(t)\,dt$ min @ x = 8

e. Find the x-coordinates of all points of inflections of the graph of y=h(x).

x = 1 x = 3 x = 6 (max/mins)

Assignment
p. 302 #57-59, 65-70

5.4 QUIZ FRIDAY

WS

[a] $g(-7) = \int_0^{-7} g'(t)\,dt = -\int_{-7}^{0} g'(t)\,dt$

$= -\left[\frac{1}{2}(3)(6) + \frac{1}{2}(3)(4) - \frac{1}{2}(1)(2)\right]$

$= -\left(9 + 6 - 1\right)$

$= -14$