4.4 Area Accumulator Notes (cont.) (Day 4)

If $g(x)=\int_a^x f(t)\,dt$,

then $g(x)=$ ____________________

$g'(x)=$ ____________________

$g''(x)=$ ____________________

If $g(x)=\int_a^{h(x)} f(t)\,dt$,

then $g(x)=$ ____________________

$g'(x)=$ ____________________

$=$ ____________________

$g''(x)=$ ____________________

Example: Find $g'(x)$

a) $g(x)=\int_{-1}^{x}\sqrt{t+2}\;dt$

b) $g(x)=\int_{x}^{-1}\sin t\;dt$

c) $g(x)=\int_{-1}^{x^3-x^2}\sqrt{1+t}\;dt$

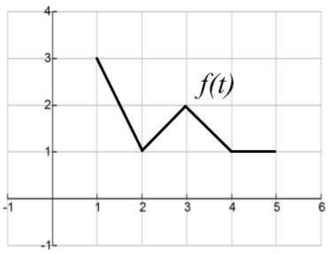
d) $g(x)=\int_{0}^{1/x}\tan t\;dt$

e) $g(x)=\int_{1}^{x}\sqrt{t^2-t}\;dt$

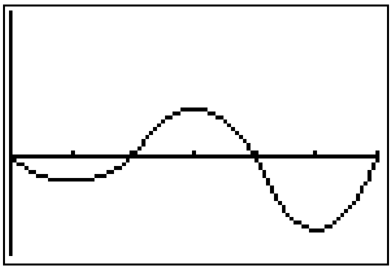
f) $g(x)=\int_{x}^{x^2} t+1\;dt$

Assume $g(x)=\int_1^x f(t)\;dt$, the graph of $f(t)$ is to the right.

$g(1)$	$g'(1)$	$g''(1.5)$
$g(2)$	$g'(4)$	$g''(4)$
$g(4)$	$g'(5)$	$g''(4.5)$



Assume $g(x)=\int_0^x f(t)\;dt$, the graph of $f(t)$ is below.



a) where does $g(x)$ have relative minimum? relative maximum?

b) where is $g(x)$ concave up?

c) where does $g(x)$ have inflection points?

d) what is the value of the maximum of $g(x)$?