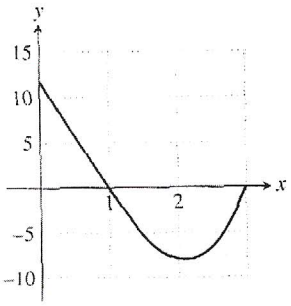
Name_____

Calculus Test Review #12

1. Let $F(x) = \int_0^x f(t)dt$,

where $f(t)$ is the continuous function whose graph is shown.



$y = f(x)$

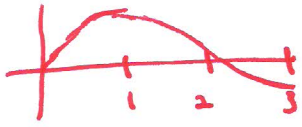
(A) Where does F achieve its maximum value? Explain.

F has max @ x=1. F'>0 before x=1 and F'<0 after x=1.

(B) Where does F achieve its minimum value? Explain.

F has a min value @ x=3 since there is more negative area than positive area.

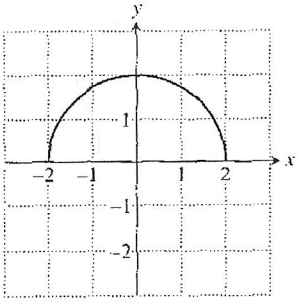
(C) Sketch a graph for F on the interval [0,3].



2. Evaluate $\frac{d}{dx}\int_x^5 2^{t^2}\,dt$.

-2^{x^2}

3. The graph of f is the semicircle shown.



Let g be the function given by $\int_0^x f(t)dt$.

What is the value of $g(-2)$?

$g(-2) = \int_0^{-2} f(t)dt$

$= -\int_{-2}^{0} f(t)dt$

$= -\pi$

$r = 2$

$\frac{1}{4}\pi(2)^2$

4. The table shows the velocity of a remote-controlled toy car as it traveled down a hallway for 10 seconds.

Time (sec)	0	1	2	3	4	5	6	7	8	9	10
Velocity (in./sec)	0	6	10	16	14	12	18	22	12	4	2

Estimate the distance traveled by the car using 10 subintervals of length 1 and the method shown.

(A) Left-hand rectangles

$0+6+10+16+14+12+18+22+12+4 = 114$

(B) Right hand intervals

$6+10+16+14+12+18+22+12+4+2 = 116$

5. Be able to find the equation of a tangent line to a continuous function.

6. $g(x) = \int_0^x f(t)dt$. Evaluate $g'(x)$.

$f(x)$

7. Be able to integrate any general antiderivative of any function. (*Also known as indefinite integrals or symbolic integration.*)

8. Be able to integrate any definite integral.