Test C Chapter 5

Name________________________________

Solve the problem.

1) Suppose that h is continuous and that $\int_{-2}^{2} h(x)\,dx = 3$ and $\int_{2}^{9} h(x)\,dx = -10$.

Find $\int_{-2}^{9} h(x)\,dx$ and $\int_{9}^{-2} h(x)\,dx$

2) Suppose that g is continuous and that $\int_{2}^{7} g(x)\,dx = 6$ and $\int_{2}^{8} g(x)\,dx = 19$.

Find $\int_{8}^{7} g(x)\,dx$ and Find $\int_{8}^{8} f(x)\,dx$.

3) Suppose that f and g are continuous and that $\int_{2}^{6} f(x)\,dx = -5$ and $\int_{2}^{6} g(x)\,dx = 9$.

Find $\int_{2}^{6} [3f(x) + 2g(x)]\,dx$.

Find the average value over the given interval.

4) $y = \frac{1}{x}$; $[3, e]$

Find dy/dx.

5) If $y = \int_{x^4}^{1} 18t^9 \, dt$ find dy/dx

6) $y = \int_{\sin x}^{\cos x} \frac{1}{4 - t^2} \, dt$ find dy/dx

7) If $\int_{1}^{4} f(x)dx = 5$, find $\int_{1}^{4} (f(x) + 10) \, dx$

Evaluate the definite integral using areas or antiderivatives.

8) $\int_{-1}^{6} 3 \, dx$

9) $\int_{1}^{2} (3x^4 - 4x^{-2}) \, dx$

Evaluate the integral.

10) $\int_{0}^{\pi/2} 20 \cos x \, dx$

11) $\int_{0}^{1} (x^5 - x^{\frac{1}{4}})dx$

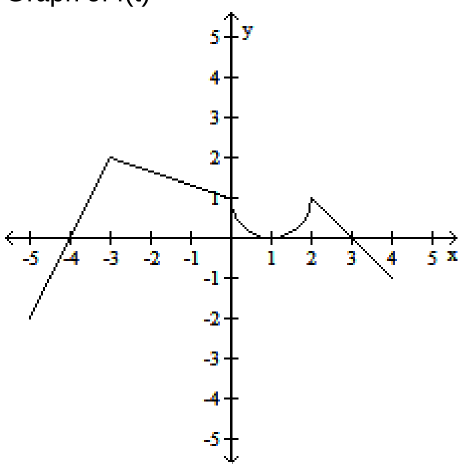
12) $\int_{\pi/4}^{3\pi/4} 5 \csc \theta \cot \theta \, d\theta$

13) $\int_{1}^{2} (4e^x - 5x^{-2}) \, dx$

14) The graph of the function, f, is given below with position defined as follows.

$$g(x) = \int_0^x f(t)\,dt$$

Graph of f(t)



a) Determine the relative maximum of g(t). Justify your answer.

b) Find the absolute maximum of g(t) on the interval [-5, 4]? Justify your answer.

c) Determine any points of inflection of g. Justify your reasoning

(f) Write the equation of the tangent line of g at t = 4.

Solve the problem.

15) Use the data below to set-up the Midpoint Riemann Sums with 3 sub-interval that would approxir

$\int_0^{12} P(t)dt$.

T	0	2	4	6	8	10	12
P(t)	0	26	43	45	50	55	59

16) Let f be a function that is twice differentiable for all real numbers. The table gives values of f for s points in the closed interval $2 \leq x \leq 13$

x	2	3	5	8	13
f(x)	2	5	-3	2	7

Set-up a Trapezoid sum with 4 subintervals indicated by the data in the table to approximate

$\int_2^{13} f(x)$.