AP Calculus BC   Name: _____

Review for Quiz 5.1-5.2

#1) Given $\int\limits_{2}^{6}\left(3+x^{3}\right)dx$ evaluate using a Riemann Sum…

(a) Using RHS endpoints and n=4 rectangles

(b) Using LHS endpoints and n=4 rectangles

(c) Using Midpoints and n=4 rectangles

#2) Given $\int\limits_{4}^{7}\left(x^{3}-5\right)dx$ evaluate using a Riemann Sum…

(a) Using RHS endpoints and n=4 rectangles

(b) Using LHS endpoints and n=4 rectangles

(c) Using Midpoints and n=4 rectangles

#3) Find the definite integral which the following Riemann Sum approximates:

$$\lim_{n\to\infty}\frac{5}{n}\left[\left(3+\frac{5}{n}\right)^{2}+\left(3+\frac{10}{n}\right)^{2}+\left(3+\frac{20}{n}\right)^{2}+....+\left(3+\frac{5n}{n}\right)^{2}\right]$$

#4) Find the definite integral which the following Riemann Sum approximates:

$$\lim_{n\to\infty}\frac{2}{n}\left[\left(\sin\left(\frac{1}{n}\right)\right)+\left(\sin\left(\frac{2}{n}\right)\right)+\left(\sin\left(\frac{4}{n}\right)\right)+....+\left(\sin\left(2\right)\right)\right]$$

#5) Water is draining out of a large tank, but occasionally debris partially obscures the drainage pipe, and as the water drains the hydrostatic pressure decreases forcing the water out at a slower rate. The result is that the rate at which the water is draining out is changing over time. The drainage rate measured in gallons per minute is recorded and is given by a twice-differentiable and strictly decreasing function R of time t. The graph of R and a table of selected values of $R(t)$ for the time interval $0 \le t \le 100$ are shown below:

$R(t)$
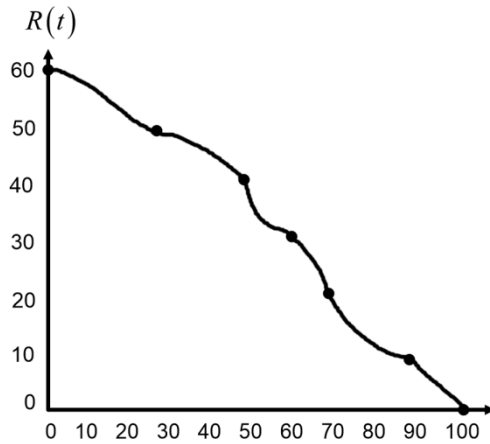
t (minutes)	R(t) (gallons per minute)
0	60
27	50
48	40
60	30
70	22
88	10
100	0

Use the data values in the table to approximate the value of $\displaystyle\int_0^{100} R(t)\, dt$ using a right Riemann Sum

with the six subintervals indicated by the data in the table.