Ch. 4 Test Review WS #4 Riemann Sums Practice Worksheet

(Determining Units of Measure and interpreting Definite Integrals!)

Important Key Point: When applying(or approximating) a Calculus process(derivatives or integrals), your units of measure will change!

1)

t (minutes)	0	1	3	6	9	10
c(t) (ounces per minute)	0	5.1	4.2	3.3	1.2	2.3

Hot water is dripping through a coffeemaker, filling a large cup with coffee. The rate that water in the cup at time t is changing, $0 \le t \le 10$, is given by a differential function c(t) , where t is measured in minutes. Select values if c(t), measured in ounces per minute are given in the table above.

a) Interpret the meaning of $c'(6)$ *and* indicate the units of measure.

b) Approximate the value of $c'(6)$ and indicate the units of measure.

c) Intepret the meaning of $\int_1^{10} c(t)dt$ and indicate the units of measure.

d) Approximate the value of $\int_1^{10} c(t)dt$ using 2 middle rectangles and indicate the units of measure.

e) Approximate the average rate of water being added on time interval [1, 10] using result from part d)

2)

t (minutes)	0	12	20	24	40
$v(t)$ (meters per minute)	0	200	240	-220	150

Johanna jogs along a straight path. For $0 \le t \le 40$, Johanna's velocity is given by a differentiable function v. Selected values of $v(t)$, where t is measured in minutes and $v(t)$ is measured in meters per minute, are given in the table above.

a) Interpret the meaning of $v'(20)$ and indicate the units of measure.

b) Approximate the value of $v'(18)$ and indicate the units of measure.

c) Intepret the meaning of $\int_{20}^{40} v(t)dt$ and indicate the units of measure.

d) Approximate the value of $\int_{20}^{40} v(t)dt$ using 2 trapezoids and indicate the units of measure.

e) Approximate Johanna's average velocity on [20, 40] using the results from part d)