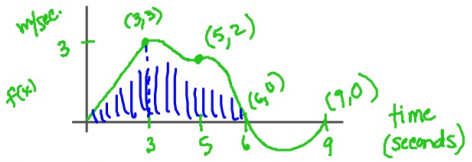
6) page ~~287 #54~~

$$s = \int_0^t f(x)\,dx$$



First step ! Write down the relationships for the problem

$s' = v = f$

$s'' = v' = f' = a$

a) What is the particle's velocity at time $t = 5$? $v(5) = f(5) = 2\ m/sec$

b) Is the acceleration of the particle at time $t = 5$ positive or negative? $a(5)$ is negative b/c $v'(5) < 0$ (OR) v is decreasing

c) What is particle's position at time $t = 3$? $s(3) = \int_0^3 f(x)\,dx$

$= \frac{1}{2}(3)(3)$

$= \frac{9}{2}$ meters

d) At what time during the first 9 seconds does "s" have its largest value? greatest area is at $t = 6$ seconds // s' changes from + to − @ $t = 6$

$s(0) = 0$

$s(6) =$ largest

$s(9) =$ —

e) Approximately when is the acceleration zero? $t = 4, 7$ b/c $v' = 0$

f) When is the particle moving toward the orgin? $(6, 9)$ seconds

away from the origin? $(0, 6)$ seconds

g) On which side of the origin does the particle lie at time $t = 9$? right side b/c $\left|\int_0^6 f(x)\,dx\right| > \left|\int_6^9 f(x)\,dx\right|$