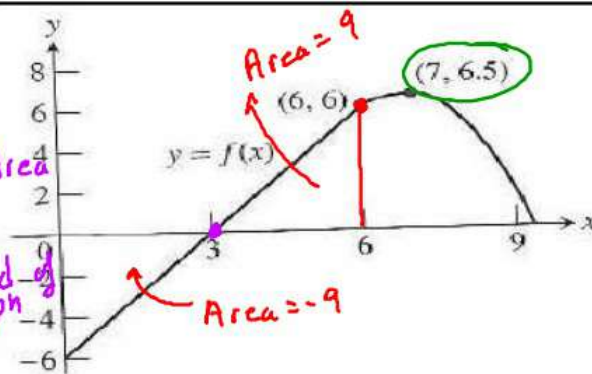
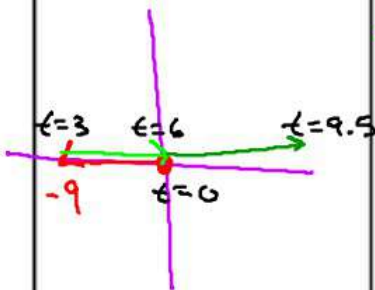


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$$s = \int_0^x f(t) dt \rightarrow \text{Area}$$

$$v = f(x) \rightarrow \text{y-coord of graph}$$

$$a = f'(x) \rightarrow \text{slope}$$



$y = f(x)$ is the differentiable function whose graph is shown in the figure. The position at time t (seconds) of the particle moving along a coordinate

axis is $s = \int_0^x f(t) dt$

a) What is the particle's velocity at time $t = 3$? $v(3) = 0$

b) Is the acceleration of the particle at time $t = 3$ positive or negative?

$$a(3) > 0$$

c) What is the particle's position at time $t = 3$? $s(3) = \int_0^3 f(t) dt = \frac{1}{2}(3)(-6)$

d) When does the particle pass through the origin?

$$t = 6$$

e) Approximately when is the acceleration 0? $t = 7$

f) When is the particle moving toward the origin? $t = 3$ to $t = 6$

g) When is the particle moving away from the origin?

$$t = 0 \text{ to } 3 \quad t = 6 \text{ to } 9.5$$

h) On which side of the origin does the particle lie at time $t = 9$?

Right