time in the interval $0 \le t \le 18$ is the squirrel farthest from building A? How far from building A is the squirrel at that time?

(c) Find the total distance the squirrel travels during the time interval $0 \le t \le 18$.

(d) Write expressions for the squirrel's acceleration $a(t)$, velocity $v(t)$, and distance $x(t)$ from building A that are valid for the time interval $7 < t < 10$.

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a.) Changes direction at $t = 9$ and $t = 15$. $v(t)$ changes sign

b) $t = 9$, 140 units Away

c.) T.D $= 140 + 50 + 25 = 215$ units

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d.) $a(t) =$ slope $\quad \therefore a(t) = -10$

$$\text{Slope} = \frac{-10-20}{10-7} = \frac{-30}{3} = -10$$

$v(t) =$ equation of line

$y - 20 = -10(x - 7)$

$y - 20 = -10x + 70$

$y = -10x + 90$

$\therefore v(t) = -10t + 90$

$s(t) = \int -10t + 90 \, dt$

$s(t) = -5t^2 + 90t + c$

$s(9) = -5(9^2) + 90(9) + c = 140$

$= -405 + 810 + c = 140$

$c = -265$

$\therefore s(t) = -5t^2 + 90t - 265$