2018 AB #2
(calculator-active)

(a)

$a(3) = v'(3) \approx \boxed{-2.118193256}$ or -2.118

(b)

$x(3) = x(0) + \int_0^3 x'(t)\,dt = -5 + \int_0^3 v(t)\,dt = \boxed{-1.760213187}$ or -1.760

(c)

$\int_0^{3.5} v(t)\,dt \approx \boxed{2.843944475}$ or 2.844 $\Rightarrow$ The displacement of the particle between $t = 0$ and $t = 3.5$ or at $t = 3.5$ the particle is about 2.844 units to the right from where it started at $t = 0$

$\int_0^{3.5} |v(t)|\,dt \approx \boxed{3.737085311}$ or 3.737 $\Rightarrow$ The total distance traveled by the particle between $t = 0$ and $t = 3.5$

(d)

$v_2(t) = x_2'(t) = 2t - 1$

The two velocities will be the same when $v(t) = v_2(t)$

or when $v(t) = 2t - 1$. Solving on the calculator: $\boxed{t \approx 1.57054}$ or 1.571