

(a) Displacement =  $\int_0^3 (3t - 8) dt = \left[ \frac{3}{2}t^2 - 8t \right]_0^3 = \frac{27}{2} - 24 = -\frac{21}{2}$  m

(b) Distance traveled =  $\int_0^3 |3t - 8| dt = \int_0^{8/3} (8 - 3t) dt + \int_{8/3}^3 (3t - 8) dt$   
 $= \left[ 8t - \frac{3}{2}t^2 \right]_0^{8/3} + \left[ \frac{3}{2}t^2 - 8t \right]_{8/3}^3$   
 $= \frac{64}{3} - \frac{3}{2} \cdot \frac{64}{9} + \frac{27}{2} - 24 - \left( \frac{3}{2} \cdot \frac{64}{9} - \frac{64}{3} \right) = \frac{65}{6}$  m