

33. Solution: B

Note that

$$\begin{aligned}\Pr[X > x] &= \int_x^{20} 0.005(20 - t) dt = 0.005 \left( 20t - \frac{1}{2}t^2 \right) \Big|_x^{20} \\ &= 0.005 \left( 400 - 200 - 20x + \frac{1}{2}x^2 \right) = 0.005 \left( 200 - 20x + \frac{1}{2}x^2 \right)\end{aligned}$$

where  $0 < x < 20$ . Therefore,

$$\Pr[X > 16 | X > 8] = \frac{\Pr[X > 16]}{\Pr[X > 8]} = \frac{200 - 20(16) + \frac{1}{2}(16)^2}{200 - 20(8) + \frac{1}{2}(8)^2} = \frac{8}{72} = \frac{1}{9}$$