33. The loss due to a fire in a commercial building is modeled by a random variable $X$ with density function

$$f(x) = \begin{cases} 
0.005(20 - x) & \text{for } 0 < x < 20 \\
0 & \text{otherwise.}
\end{cases}$$

Given that a fire loss exceeds 8, what is the probability that it exceeds 16?

(A) $\frac{1}{25}$

(B) $\frac{1}{9}$

(C) $\frac{1}{8}$

(D) $\frac{1}{3}$

(E) $\frac{3}{7}$

34. The lifetime of a machine part has a continuous distribution on the interval (0, 40) with probability density function $f$, where $f(x)$ is proportional to $(10 + x)^{-2}$.

Calculate the probability that the lifetime of the machine part is less than 6.

(A) 0.04

(B) 0.15

(C) 0.47

(D) 0.53

(E) 0.94