71. Solution: A
The distribution function of \( Y \) is given by
\[
G(y) = \Pr(T^2 \leq y) = \Pr(T \leq \sqrt{y}) = F\left(\sqrt{y}\right) = 1 - 4/y
\]
for \( y > 4 \). Differentiate to obtain the density function \( g(y) = 4y^{-2} \)
Alternate solution:
Differentiate \( F(t) \) to obtain \( f(t) = 8t^{-3} \) and set \( y = t^2 \). Then \( t = \sqrt{y} \) and
\[
g(y) = f(t(y))\frac{dt}{dy}\left|_{t(y)}\right. = f\left(\sqrt{y}\right)\frac{d}{dt}\left(\sqrt{y}\right) = 8y^{-3/2}\left(\frac{1}{2}y^{-3/2}\right) = 4y^{-2}
\]

72. Solution: E
We are given that \( R \) is uniform on the interval \((0.04, 0.08)\) and \( V = 10,000e^R \)
Therefore, the distribution function of \( V \) is given by
\[
F(v) = \Pr[V \leq v] = \Pr[10,000e^R \leq v] = \Pr[R \leq \ln(v) - \ln(10,000)]
\]
\[
= \frac{1}{0.04} \int_{0.04}^{\ln(v) - \ln(10,000)} dr = \frac{1}{0.04} \left. r \right|_{0.04}^{\ln(v) - \ln(10,000)} = 25 \ln(v) - 25 \ln(10,000) - 1
\]
\[
= 25 \left[ \ln\left(\frac{v}{10,000}\right) - 0.04 \right]
\]

73. Solution: E
\[
F(y) = \Pr[Y \leq y] = \Pr[10X^{0.8} \leq y] = \Pr[X \leq \left(\frac{y}{10}\right)^{1/0.8}] = 1 - e^{-\left(\frac{y}{10}\right)^{1/0.8}}
\]
Therefore, \( f(y) = F'(y) = \frac{1}{8} \left(\frac{y}{10}\right)^{1.12} e^{-\left(\frac{y}{10}\right)^{1/0.8}} \)