

71. Solution: A

The distribution function of Y is given by

$$G(y) = \Pr(T^2 \leq y) = \Pr(T \leq \sqrt{y}) = F(\sqrt{y}) = 1 - 4/y$$

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

$$g(y) = f(t(y))|dt/dy| = f(\sqrt{y})\left|\frac{d}{dt}(\sqrt{y})\right| = 8y^{-3/2}\left(\frac{1}{2}y^{-1/2}\right) = 4y^{-2}$$