

Question #207

Key: E

$$\begin{aligned}S_X(4) &= 1 - \int_0^4 f_X(x) dx = 1 - \int_0^4 0.02x dx \\ &= 1 - 0.01x^2 \Big|_0^4 \\ &= 0.84\end{aligned}$$

$$f_{Y^P}(y) = \frac{f_X(y+4)}{S_X(4)} = \frac{0.02(y+4)}{0.84} = 0.0238(y+4)^2$$

$$\begin{aligned}E(Y^P) &= \int_0^6 y(0.0238(y+4)) dy = 0.0238 \left(\frac{y^3}{3} + \frac{4y^2}{2} \right) \Big|_0^6 \\ &= 3.4272\end{aligned}$$