Problem 51

$$f(x) = \frac{2.5(.6)^{2.5}}{x^{3.5}} \qquad x > .6$$

Deductible = 2

Y: losses not paid by policy

$$Y = \begin{cases} X & .6 < X < 2 \\ 2 & X > 2 \end{cases}$$

$$E(Y) = \int_{.6}^{2} x \cdot f(x) \cdot dx + \int_{2}^{\infty} 2 \cdot f(x) \cdot dx$$

$$= \int_{.6}^{2} \frac{2.5(.6)^{2.5}}{x^{3.5}}\,dx + \int_{2}^{\infty} \frac{5(.6)^{2.5}}{x^{3.5}}\,dx$$

$$= -\frac{2.5(.6)^{2.5}}{1.5(x)^{1.5}}\Bigg|_{.6}^{2} - \frac{2(.6)^{2.5}}{x^{2.5}}\Bigg|_{2}^{\infty}$$

$$= \frac{5}{3}(.6) - \frac{5(.6)^{2.5}}{3(2)^{1.5}} + \frac{(.6)^{2.5}}{2^{1.5}} - \frac{2(.6)^{2.5}}{\infty}$$

$$= 1 - .1643 + .0986 = .93$$

C