

### Problem 113

W: wife survives

P: profit

H: husband survives

B: benefit paid

$$P = 1000 - B$$

$$E(P) = 1000 - E(B)$$

$$\begin{aligned} P(H) &= P(H \cap W) + P(H \cap W^c) \\ &= .96 + .01 = .97 \end{aligned}$$

$$P(W|H) = \frac{P(W \cap H)}{P(H)} = \frac{.96}{.97} = .9897$$

$$P(W^c|H) = 1 - P(W|H) = .0103$$

$$\begin{aligned} E(B) &= 0 \cdot P(W|H) + 10,000 \cdot P(W^c|H) \\ &= 10,000 (.0103) = 103 \end{aligned}$$

$$E(P) = 1000 - 103 = \underline{\underline{897}} \quad \boxed{E}$$