

(4) (a) $u_1(w) = w^2$. No bet $u_1(1000) = 1,000,000$.

Bet $(0.99)(990)^2 + (0.01)(1990)^2 = 1,009,900$.

Second is larger, so would buy ticket.

(b) $u_2(w) = \sqrt{w}$. No bet $u_2(1000) = \sqrt{1000} = 31.623$

Bet $(0.99)u_2(990) + (0.01)u_2(1990) = 0.99\sqrt{990} + 0.01\sqrt{1990}$
 $= 31.596$

Not buy lottery ticket because $31.623 > 31.596$.

(5) $E(A) = (0.6)200 + (0.4)(-50) = 120 - 20 = 100$

$$E(D) = (0.9)(200) + (0.1)(-50) = 180 - 5 = 175$$

$$E(C) = \frac{4}{7}(175) + \frac{3}{7}(0) = 100$$

After cost of market testing, expected payoff
at C is $100 - 40 = 60$

Since $60 < 100$, would not market test.