

Exercise 3

Earl Anthony Gamboa

Earl Anthony T. Gamboa Exercise #3

Rachel = 1.5 R. Steg = -5 y = 0.9

1) Rachel = 0.8 R. Steg = 0.9 0.1
0.4 0.6 0.3 0.7

2) Sunny r.r. = $0.5 \times 5 + 0.5 \times (-5) = 2.5 - 2.5 = 0$
Cloudy r.r. = $0.5 \times 3 + 0.5 \times 1 = 1.5 + 0.5 = 2$
3) r.r. = 2

Row 1 Sunny
 $P_H(1,1) = 0.5 \times 0.8 + 0.5 \times 0.9 = 0.4 + 0.45 = 0.85$
 $P_H(1,2) = 0.5 \times 0.4 + 0.5 \times 0.1 = 0.1 + 0.05 = 0.15$

Row 2 Cloudy
 $P_H(2,1) = 0.5 \times 0.4 + 0.5 \times 0.3 = 0.2 + 0.15 = 0.35$
 $P_H(2,2) = 0.5 \times 0.6 + 0.5 \times 0.7 = 0.3 + 0.35 = 0.65$

4) $P_H = \begin{bmatrix} 0.85 & 0.15 \\ 0.35 & 0.65 \end{bmatrix}$ $V_1 = 0.1 \times 0.9(0.85V_1 + 0.15V_2)$
 $= 0.1 \times 0.765V_1 + 0.135V_2$
 $V_1 - 0.0765V_1 - 0.135V_2 = 0$
 $0.2235V_1 - 0.135V_2 = 0$

5) $V_1 = \frac{0.135V_2}{0.2235}$ $V_2 = 2 + 0.9(0.35V_1 + 0.65V_2)$
 $= 2 + 0.315V_1 + 0.585V_2$
 $V_2 - 0.585V_2 - 0.315V_1 = 2$
 $0.415V_2 - 0.315V_1 = 2$
 $V_2 = \frac{2 + 0.315V_1}{0.415}$

Substitute for V_1 in V_2
 $V_2 = \frac{2 + 0.315 \left(\frac{0.135V_2}{0.2235} \right)}{0.415}$
 $V_2 = \frac{2 + 0.180954466V_2}{0.415}$
 $0.224045532V_2 = 2$
 $V_2 = 8.945454545$

Substitute for V_2 in V_1
 $V_1 = \frac{0.135 \times 8.945454545}{0.2235}$
 $V_1 = 5.409090909$

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