

CS 333202: Probability and Statistics HW2 part 2

1. $P\{X = 1\} = 1/2$

$$P\{X = 2\} = \frac{5}{18}$$

$$P\{X = 3\} = \frac{5}{36}$$

$$P\{X = 4\} = \frac{10}{168}$$

$$P\{X = 5\} = \frac{5}{252}$$

$$P\{X = 6\} = \frac{1}{252}$$

$$P\{X = 7\} = 0$$

$$P\{X = 8\} = 0$$

$$P\{X = 9\} = 0$$

$$P\{X = 10\} = 0$$

2. (a) $n - 2i, i = 0, 1, \dots, n$

(b) $P\{X = 3\} = 1/8$

$$P\{X = 1\} = 3/8$$

$$P\{X = -1\} = 3/8$$

$$P\{X = -3\} = 1/8$$

3. (a) $p(X = 6) = \frac{11}{36}$

$$p(X = 5) = \frac{9}{36}$$

$$p(X = 4) = \frac{7}{36}$$

$$p(X = 3) = \frac{5}{36}$$

$$p(X = 2) = \frac{3}{36}$$

$$p(X = 1) = \frac{1}{36}$$

(b) $p(Y = 5) = \frac{1}{36}$

$$p(Y = 4) = \frac{2}{36}$$

$$p(Y = 3) = \frac{3}{36}$$

$$\begin{aligned} p(Y=2) &= \tfrac{4}{36} \\ p(Y=1) &= \tfrac{5}{36} \\ p(Y=0) &= \tfrac{6}{36} \\ p(Y=-j) &= p(Y=j), j>0 \end{aligned}$$