

**Question 3.4**

$S = \{HHH, THHH, HTHHH, TTHHH, TTTHHH, HTTHHH, THTHHH, HHTHHH\}$

$S$  is discrete because you cannot flip a fraction of a heads or tails.

**Question 3.10**

The probability of rolling any side of a fair six sided die is  $\frac{1}{6}$ , so the formula for probability distribution is  $f(x) = \frac{1}{6}$  for  $x = 1, 2, 3, 4, 5, 6$  Equal chance of getting any side.

**Question 3.12**

- $P(T = 5) = F(5) - F(4) = \frac{1}{4}$
- $P(T > 3) = 1 - F(3) = \frac{1}{2}$
- $P(1.4 < T < 6) = F(6) - F(1.4) = \frac{1}{2}$
- $P(T \leq 5 \mid T \geq 2) = \frac{P(2 \leq T \leq 5)}{P(T \geq 2)} = \frac{F(5) - F(2)}{1 - F(2)} = \frac{2}{3}$

**Question 3.14**

**Question 3.18**

**Question 3.20**

**Question 3.24**

**Question 3.30**

**Question 3.32**

**Question 3.38**

**Question 3.40**

**Question 3.44**

**Question 3.46**

**Question 3.50**

**Question 3.68**

**Question 3.80**

$$\left. \frac{\frac{1}{x}}{1 + \frac{x}{7}} \right|_{-5}^{17}$$