Math 530

Autumn 2006

Solution to 3.4.1

(a.)

$$P = \binom{9}{5} p^5 (1-p)^4 = 126 p^5 (1-p)^4$$

(b.)

$$P = (1-p)^6 p$$

(c.)

$$P = \binom{11}{4} p^4 (1-p)^7 p$$

(d.) Let X be the number of heads in the first 8 tosses and Y be the number in the next 5 tosses.

$$P = P(X = Y) = \sum_{k=0}^{5} P(X = k, Y = k) = \sum_{k=0}^{5} P(X = k) P(Y = k)$$

$$P = \sum_{k=0}^{5} \binom{8}{k} p^k (1-p)^{8-k} \binom{5}{k} p^k (1-p)^{5-k}$$