STAT 400 SUMMER II 2000 (PROFESSOR GREEN)
SOLUTIONS TO PROBLEMS DUE AUGUST 3

2.

(b) .56
(c) .3
(d) .53

6.

(a) .05184
(b) .40144
(c) The marginal pmf of Y is given by $p_Y(0) = .24784$, $p_Y(1) = .35904$, $p_Y(2) = .26784$, $p_Y(3) = .10584$, and $p_Y(4) = .01944$

8.

(a) .0509
(b) For $x, y \geq 0$ and $x + y \leq 6$,

$$p(x,y) = \frac{\binom{8}{x}\binom{10}{y}\binom{12}{6-x-y}}{\binom{30}{6}}.$$

10.

(a) The joint pdf of X and Y is 1 on the square $5 \leq x \leq 6, 5 \leq y \leq 6$, and 0 elsewhere.
(b) .25
(c) $\frac{11}{36}$

12.

(a) $\frac{1}{e^3} = .0498$
(b) The marginal pdf of X is $\frac{e^{-x}}{x}$, and the marginal pdf of Y is $\frac{1}{(1+y)^2}$. X and Y are not independent, since the joint pdf is not the product of the marginal pdfs.
(c) .299786

14.

(a) $(1 - e^{-\lambda t})^{10}$

(b)

$$\binom{10}{k}(1-e^{-\lambda t})^k e^{-(10-k)\lambda t}$$

(c)

$$252e^{-(4\lambda+\theta)t}(1-e^{-\lambda t})^5 + 210e^{-5\lambda t}(1-e^{-\lambda t})^4(1-e^{-\theta t})$$