

16. a) $P(X_1=5, X_2=2, X_3=3)$ 0.7 < middle

0.1 < above

0.2 < below

$$\frac{10!}{5!2!3!} (0.7)^5 (0.1)^2 (0.2)^3$$

~~0.03388~~ → 0.03388

~~$\frac{10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5}{5! \cdot 2! \cdot 3!}$~~ $\frac{8040}{2} = 22520$

$22520 (0.7)^5 (0.1)^2 (0.2)^3$

b) $X \sim \text{Bin}(10, 0.7)$

$P(X > 9) = 1 - P(X \leq 9) = P(X=9) + P(X=10)$

$$= \frac{10!}{(10-9)!9!} (0.7)^9 (1-0.7)^1 + \frac{10!}{(10-10)!10!} (0.7)^{10} (1-0.7)^0$$

~~$\frac{10 \cdot 9}{1 \cdot 1}$~~

$\frac{10!}{0!10!} \geq 1$

$10 (0.7)^9 (0.3)^1$

↓
0.1216

$1 (0.7)^{10} (0.3)^0$

↓
0.028

0.149