Name:

MATH 320: Review Part 2

1. Below is the pmf of X, the number of goals scored by Brazil.

x	0	1	2	3
$f(x)$	0.26	0.37	0.22	0.15

   (a) Find $P(X > 1)$ and $P(X \leq 2)$.

   (b) Find $E(X)$ and $V(X)$.

   (c) Suppose players get paid \$1,000 for each game and an additional \$100 bonus for every goal the team scores. Let Y be the random variable for the total amount of money a single player receives for a particular game. Find $E(Y)$ and $SD(Y)$.

   (d) Write the cdf of Y as a piecewise function.

   (e) Plot the cdf of Y.

2. Let X have the following pmf:

$$f(x) = \begin{cases} 0.2 & x = 3, 4, 5, 6, 7 \\ 0 & \text{otherwise} \end{cases}$$

(a) Find $E(X)$ and $V(X)$.

(b) If $Y = -0.25X + 1$, find $SD(Y)$.

3. Suppose X has the following density function with constant c: $f_X(x) = cx^2, \qquad -1 < x < 1.$

(a) Find the constant c so that $f_X(x)$ is a valid pdf.

(b) Find $E(X)$ and $V(X)$.

(c) Find the cdf of X, $F_X(x)$.

(d) Find $P(-0.1 < X < 0.3)$.

(e) Find $P(X > 0.2 \mid X < 0.4)$.

(f) Find the median m of X.

(g) Find the cutoff for the upper 20^{th} percent of X.

(h) Let $Y = X^3$. Find $E(Y)$.

(i) Find $P(Y < 0.5)$