## IDSC 6490 Final Work Book Part (2)

1) Suppose Mike hits free throws from the line @ a constant reste of 20%.

(Im a bad basket-ball player \* Lot\*)

Suppose Mille Makes le free-Hhrows.

(a) What is the probability Mike Makes
3? (makes 3 of the possible 6 attempts)

Note P=.2 2=1-P=.8 n=6

Hopefully this can be seen to be

drats \*LOL\* I don't have a pencil \*LOL\*

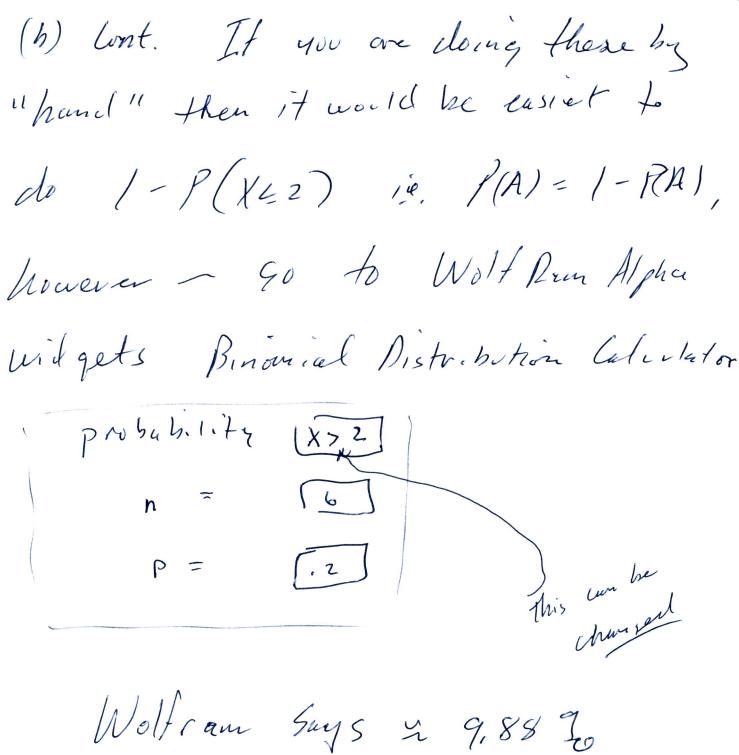
a binomial distribution.

(a) Cout. Then 
$$P(\chi=3)$$
 is
$$\frac{(6)^{3}(6)^{3}(8)^{3}}{(6)^{3}(8)^{3}} = \frac{(6)^{3}(6)^{3}(8)^{3}}{(6)^{3}(8)^{3}}$$

$$= 9.2 \% \ \text{according to Wolf Ram (c)}$$

(b) What is the probability that Mike Makes more than 2 freethrows? i.e.  $P(\chi > Z)$ This is  $P(\chi_{23}) =$ P(X=3) + P(X=4) + P(X=5)+ // X=-6). Not for to

Compute.



Wolfram Suys & 9,88 %

(C) What is the probability that Mile Mells between 3 and 5 free-throws (Inclusive) iè. P(34 X45) which is P(X=3) + P(X=4) + P(X=5). This is P(X=5) - P(X=2) chops out 2 and below but leaves in 3

Once again Wolfrom Alpha

(C) Cout. So we need to Fidelle about with 4 V5 ( a we don't have this. P(34 X45) = P(X45) - P(X42) This is  $P(\chi_{26}) - P(\chi_{23})$ Probability [X<6] n = [6] p = [2] p = [2]

.999936 - .90112 = .0988

9.88 7.

(2) Consider the function  $f_{\alpha i} = b_{x^{2}}$  (6)

(a) Determine b so that for com he considered a probability distribution on [0,2].

on [0,2].

We need  $\int_{0}^{2} bx^{2}dx = 1$  so

 $\frac{6x^3}{3}\Big|_{0}^{2}$ 

 $b(2)^3 - b(0)^3 = 1$   $\overline{3}$ 

= 7b(8) = 1 or  $\frac{8}{3}b = 1$ 

So b = 3/8

So on (0,2), for) = 3,2 can
be considered a proper probability
distribition

This is 
$$\int_{8}^{3/2} \frac{3}{8} x^2 dx = \frac{x^3}{8}$$

$$= \frac{\left(\frac{3}{2}\right)^{2}}{9} - \frac{\left(1\right)^{2}}{9} = \frac{27}{64} - \frac{9}{64} = \frac{19}{64}$$

This is 1- P(X=1)

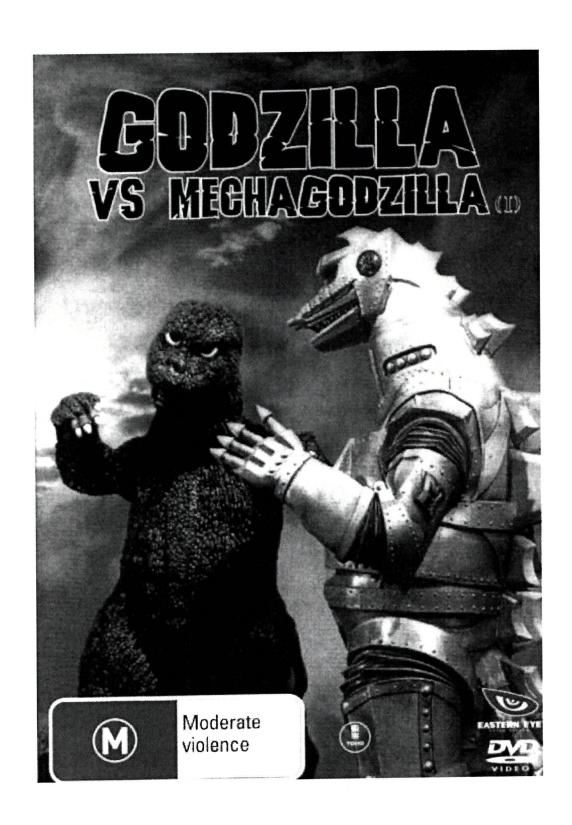
$$1 - \int_0^{3} x^2 dx$$

Remarker [0,2] is the interval so it stops at a on the low end(i)

$$= \left| - \left( \frac{x^3}{8} \right) \right| = \left( \frac{1}{8} \right)^3 - \left( \frac{3}{8} \right)^3$$

$$= 1 - \frac{1}{8} = \frac{7}{8}$$

$$87.5'$$



A good more to do your extension thereland comen and com