MATH 110 – QUIZ 12 – 16 NOVEMBER 2006

Answer all of the following questions in the space provided.

1. A fair coin is tossed three times and the number of heads is observed.

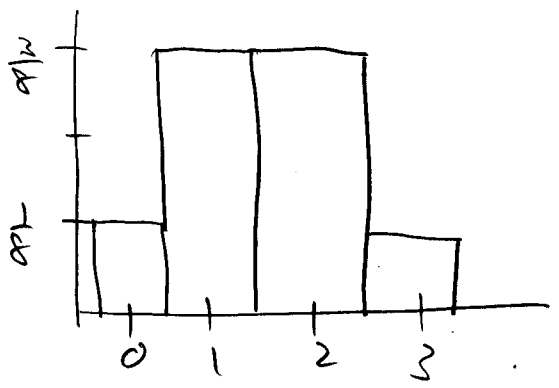
(a) (4 pts.) Determine the probability distribution for this experiment and draw its histogram.

Pr(0 heads) = 1/8

Pr(1 head) = 3/8

Pr(2 heads) = 3/8

Pr(3 heads) = 1/8



(b) (3 pts.) Define the random variable X by $X =$ "the number of heads observed in three tosses of a fair coin." Write down a table giving the probability distribution for this random variable.

k	$\Pr(X=k)$
0	1/8
1	3/8
2	3/8
3	1/8

(c) (3 pts.) Write down a table giving the probability distribution for the random variable $(X-1)^2$, where X is the random variable defined in part (b).

k	$\Pr((X-1)^2=k)$	
0	3/8	← Since $(X-1)^2=0$ means $X=1$
1	4/8	← Since $(X-1)^2=1$ means $X=0$ or $X=2$
4	1/8	← Since $(X-1)^2=4$ means $X=3$