1.

x	1	2	3	4	5
$f(x)$	0.1	0.4	0.25	0.15	0.1

$\tilde{x}$	3	5	7	9	11
$f(x)$	0.1	0.4	0.25	0.15	0.1

(a) IS f A PDF?

(b) FIND $E(x)$, $E(x^2)$.

(c) USE TWO DIFFERENT METHODS TO FIND $Var(x)$.

(d) FIND A FAST WAY TO CALCULATE $E(\tilde{x})$, $Var(\tilde{x})$.

2. FOR A BINOMIAL DISTRIBUTION WITH $n=3$, PROVE $E(x)=np$.

3. LET x HAVE GEOMETRIC DISTRIBUTION WITH $p=\frac{1}{4}$.

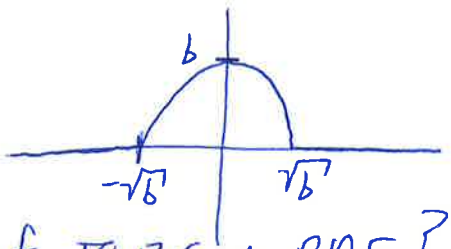
(a) FIND $P(1), P(2), P(3)$ AND $F(3)$.

(b) FIND $P(x>\mu)$.

4. THE AREA OF NSW IS $801150 km^2$ AND ABOUT 10000 BUSH FIRES OCCUR HERE PER YEAR. IN A RANDOMLY SELECTED $101 km^2$ AREA, WHAT IS THE PROBABILITY OF

(a) 1 FIRE AND (b) 2 FIRES HAPPENING THERE THIS YEAR?

5. DEFINE $f(x) = \begin{cases} -x^2+b, & -\sqrt{b} \le x \le \sqrt{b} \\ 0, & \text{ELSE.} \end{cases}$



WHAT DOES b HAVE TO BE IN ORDER FOR f TO BE A PDF?