Stat 122 (Mathematical Statistics 2)

Problem Set No. 1

INSTRUCTIONS: Answer the following as indicated. Show detailed solutions.

1. Suppose a random variable Y has the following density function

$$f_Y(y) = \begin{cases} \frac{3}{2}y^2 + y, \ 0 \le y \le 1 \\ 0, \ \text{elsewhere} \end{cases}$$

Find the density function of $U = 5 - \frac{Y}{2}$. [10 points]

2. Let Y have probability density function given by

$$f_Y(y) = \begin{cases} \frac{y+1}{2}, \ -1 \le y \le 1 \\ 0, \ \text{elsewhere} \end{cases}$$

Find the density function for $U = Y^2$. [15 points]