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**Probability Theory: Activity 10**

Name: \_\_\_\_\_

Consider a probability density function as below:

$$f(x) = c(1 - (1 - x)^2), \text{ for } 0 < x < 2$$

Find the following:

1. Find  $c$  and sketch the PF.

2. Find  $P(1/4 < X < 3/4)$ .

3. Find  $P(X < 1/2)$

4. Find  $P(X < x)$

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5. Find  $E(X)$ .

6. Find  $E(X^2)$

7. Find  $\text{Var}(X)$