

Math 026L.04 Spring 2002
Quiz #10

Name: _____

You have 20 minutes to complete this quiz which is worth 20 points. Calculators are permitted, but no other aids are allowed. Show all work neatly and in order, and clearly indicate your final answers. Answers must be justified whenever possible in order to earn full credit. When you do use your calculator, sketch all relevant graphs and write down all relevant mathematics.

1. (*12 points*) Consider the following game. We choose a ball at random from an urn containing 7 red, 3 green, and 2 amber balls. We win \$2 if we choose a green ball, we lose \$1 if we choose a red ball, and we don't win or lose any money if we choose an amber ball. Let X represent our winnings. Find the probability mass density of X and use it to determine the expected winnings $\mathbb{E}(X)$ each time we play.

2. (8 points) Suppose that $p(t)$ is a density function and is defined for all $-\infty < t < \infty$.

State the two conditions that a density function must satisfy.

(a)

(b)

What is the definition of the corresponding cumulative distribution function $P(t)$.

State both parts of the Fundamental Theorem of Calculus in terms of p and P .

(a) Part I:

(b) Part II: