Math 2263 Section 10 Quiz 8

Name: _____

Time limit: 15 minutes

1. (4 points) The joint density function for a pair of random variables X and Y is

$$f(x,y) = \begin{cases} 4xy & \text{if } 0 \le x \le 1,\ 0 \le y \le 1\,, \\ 0 & \text{otherwise.} \end{cases}$$

Find the expected value of X.

2. (5 points) Write down an integral **in polar coordinates** that yields the surface area of the part of the paraboloid $z = 9 - x^2 - y^2$ that lies above the xy-plane. **Do not evaluate the integral.**

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3. (6 points) Evaluate the iterated integral

$$\int_0^2 \int_0^{2z} \int_0^{\ln x} xe^{-y} dydxdz\,.$$

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