

Homework IV Second-Half

Due in class Monday July 30 2017

1. In a forest, the proportion of trees shorter than x feet is given by

$$F(x) = \begin{cases} \frac{x}{10} - \frac{x^2}{400}, & 0 \leq x \leq 20 \\ 1, & x > 20 \end{cases}$$

Compute the average height of the trees in the forest.

2. Calculate the double integral:

$$\iint_R ye^{-xy} dA$$

where $R = [0, 2] \times [0, 3]$

3. Find the volume of the solid that lies under the plane $4x + 6y - 2z + 15 = 0$ and above the rectangle $R = [-1, 2] \times [1, 2]$
4. Rewrite the following integral in the form of $\iint f(x, y) dy dx$

$$\int_0^{\sqrt{\pi}} \int_y^{\sqrt{\pi}} f(x, y) dx dy$$

5. Evaluate the double integral

$$\iint_D y^2 dA$$

where D is the triangle with vertexes $(1, 1), (-1, -1), (-3, 1)$

6. Compute the area of the region bounded between the curves $y = -x^2$ and $y = x^2 - 8$ by double integral