> In the space provided, please write your solution to the following exercises. Show all of your work and not just the final conclusion. Remember to use good notation. The majority of the credit you receive will be based on the completeness and the clarity of your responses.

1. (5 points) Find the point on the line $y = x$ that is closest to the point $(1,0)$. (The distance formula is given by $D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$)
   Hint: It is easier to minimize the square of the distance.

2. (5 points) Evaluate the integral

$$\int (z^{4/5} - z^{2/3} + z^{5/4})dz$$