

Written HW10 – MATH 3503 Fall 2020

Due by 27 October for timely completion credit

Given a wire shaped into a curve C with linear density function $\rho(x, y)$, its mass is given by $m = \int_C \rho(x, y) ds$. The center of mass of the wire occurs at the point (\hat{x}, \hat{y}) , where $\hat{x} = \frac{1}{m} \int_C x \rho(x, y) ds$ and $\hat{y} = \frac{1}{m} \int_C y \rho(x, y) ds$.

1. Find mass and center of mass of a wire the shape of a quarter circle of $x^2 + y^2 = 2$, $x \geq 0$, $y \geq 0$ if its density function is $\rho(x, y) = x + y$.