

Consider a parabola $y = \alpha x^2$ for $0 \text{ m} \leq x \leq 5 \text{ m}$. Find the total charge if the charge density on the parabola is proportional to the width of the parabola and varies from 0 Coulombs per meter at $x = 0$ m to 11 Coulombs per meter at $x = 5$ m.