

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.