

Department of Mathematics  
IIT Madras  
MA1101: Functions of Several Variables  
Exercise Set 4: Vector Calculus

1. Evaluate  $\int_C \sqrt{x^2 + y^2} ds$  along the curve  $C$  given by  $\vec{r}(t) = (4\cos(t))\hat{\mathbf{i}} + (4\sin(t))\hat{\mathbf{j}} + 3t\hat{\mathbf{k}}$ ,  $-2\pi \leq t \leq 2\pi$