

$$1. \quad \vec{r}(t) = \langle 4-4t, 3t \rangle, \quad 0 \leq t \leq 1$$

$$\vec{r}'(t) = \langle -4, 3 \rangle$$

$$|\vec{r}'(t)| = \sqrt{(-4)^2 + 3^2} = 5$$

$$\text{So } \int_C x + y^2 \, ds = \int_0^1 \left( \underbrace{(4-4t)}_x + \underbrace{(3t)^2}_{y^2} \right) \cdot 5 \, dt =$$

$$5 \int_0^1 4 - 4t + 9t^2 \, dt = 5(4t - 2t^2 + 3t^3) \Big|_0^1 = 25$$

$$2. \quad \vec{r}(t) = \langle 0, t \rangle \quad 0 \leq t \leq 3$$

$$\vec{r}' = \langle 0, 1 \rangle$$

$$|\vec{r}'| = 1$$

$$\int_C x + y^2 \, ds = \int_0^3 (0 + t^2) \cdot 1 \, dt =$$

$$\frac{t^3}{3} \Big|_0^3 = 9.$$