

$$\mathbf{r}(t) = \langle 1 + 4t, 3t, 4t \rangle, \quad 0 \leq t \leq 1,$$

$$\begin{aligned} W &= \int_C \mathbf{F} \cdot d\mathbf{r} = \int_0^1 \langle 7t, 1 + 8t, 1 + 7t \rangle \cdot \langle 4, 3, 4 \rangle \, dt \\ &= \int_0^1 (28t + 3(1 + 8t) + 4(1 + 7t)) \, dt \\ &= \int_0^1 (80t + 7) \, dt = [40t^2 + 7t]_0^1 = 47 \end{aligned}$$