

Check your understanding

32. Suppose that f is a differentiable function and $\mathbf{r}(t)$ is a parametrized curve in the domain of f defined for $0 \leq t \leq 1$. Which of the following implies that $f(\mathbf{r}(0)) = f(\mathbf{r}(1))$?
- (a) $\nabla f(\mathbf{r}(t)) \perp \mathbf{r}'(t)$ for all t .
 - (b) $\nabla f(\mathbf{r}(t))$ is a scalar multiple of $\mathbf{r}'(t)$ for all t .
 - (c) Neither.

Answer: (a).