Multivariable Calculus
Day 5
Integrals of vector functions

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Arc Length

Terminology: Arc length = curve length

Line segment length = the length of a line

Idea: Arc length = limit of sum of lengths of small line segments

Worksheet

- Compute the length of the curve

$$\mathbf{r}(t) = \langle \cos(t), \sin(t), t \rangle$$

  where $t \in [0, 2\pi]$.

- Compute the length of the curve made by the graph of the function

$$f(x) = x^3$$

  where $x \in [1, 4]$.