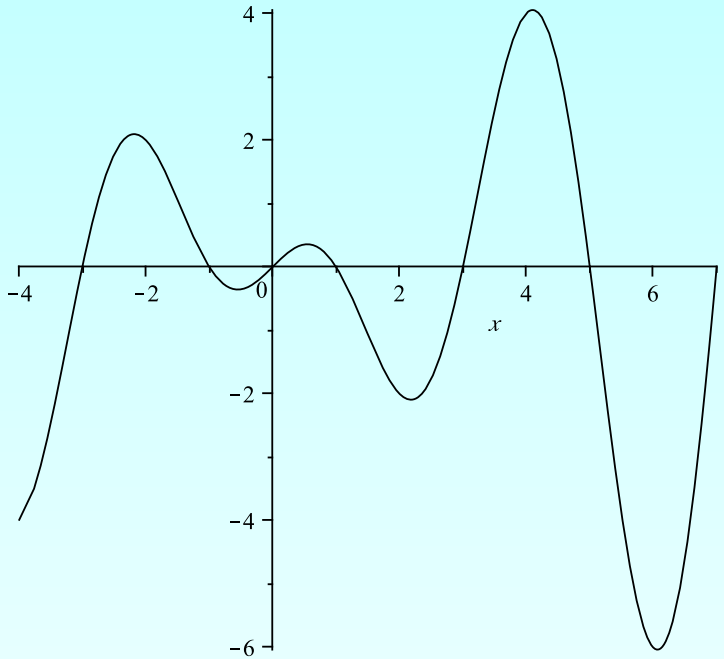

Let $g(x)$ be a differentiable function on the interval $[a, b]$. The arclength of $g(x)$ from $x = a$ to $x = b$ is given by:

$$\text{arclength} = \int_a^b \sqrt{1 + g'(x)^2}\, dx.$$

Recall:

Mean Value Theorem

Suppose that f is continuous on the closed interval $[a, b]$ and differentiable on the open interval (a, b). Then there is a number c between a and b for which

$$f'(c) = \frac{f(b) - f(a)}{b - a}.$$