We approximate the length of a curve using tangent lines that touch the curve at an arbitrary point and get the approximation formula $L \approx \sum_{i=1}^{n} \sqrt{1 + [f'(x_i^*)]^2} \Delta x$, where $x_i^*$ represents an arbitrary point in the ith subinterval. Then we prove $L = \lim_{n \to \infty} \sum_{i=1}^{n} \sqrt{1 + [f'(x_i^*)]^2} \Delta x$. Since $x_i^*$ is an arbitrary point, the proved formula fully satisfies the requirement of the definition of a definite integral and can be converted into the formula $L = \int_{a}^{b} \sqrt{1 + [f'(x)]^2} \, dx$. $L = \lim_{n \to \infty} \sum_{i=1}^{n} \sqrt{1 + [f'(x_i^*)]^2} \Delta x$ is a generic formula and covers the formula $L = \lim_{n \to \infty} \sum_{i=1}^{n} \sqrt{1 + [f'(x_i^c)]^2} \Delta x$, where $x_i^c$ represents a certain point, derived by approximating the length of a curve using secant lines. (Received September 22, 2017)