

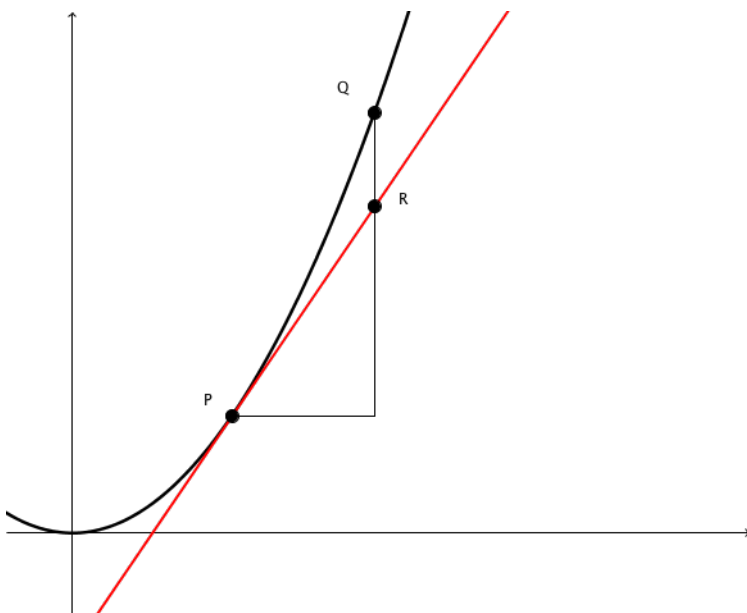
Differentials

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Let $y = f(x)$ be a differentiable function, then the **differential** dy is defined as

$$dy = f'(x)dx$$

where dx is an independent variable.



Example 1.

Compare the values of Δy and dy if $y = f(x) = x^3 + x^2 - 2x + 1$ and x changes

1. from 2 to 2.05

2. from 2 to 2.01

Example 2.

The radius of a sphere was measured and found to be 21 cm with a possible error in measurement of at most 0.05 cm. What is the maximum error in using this value of the radius to compute the volume of the sphere?