8.7 Differential

Functions: f, u, v
Independent variable: x
Derivative of a function: $y'(x)$, $f'(x)$
Real constant: C
Differential of function $y = f(x)$: dy
Differential of x: dx
Small change in x: Δx
Small change in y: Δy

838. $dy = y'dx$

839. $f(x + \Delta x) = f(x) + f'(x)\Delta x$

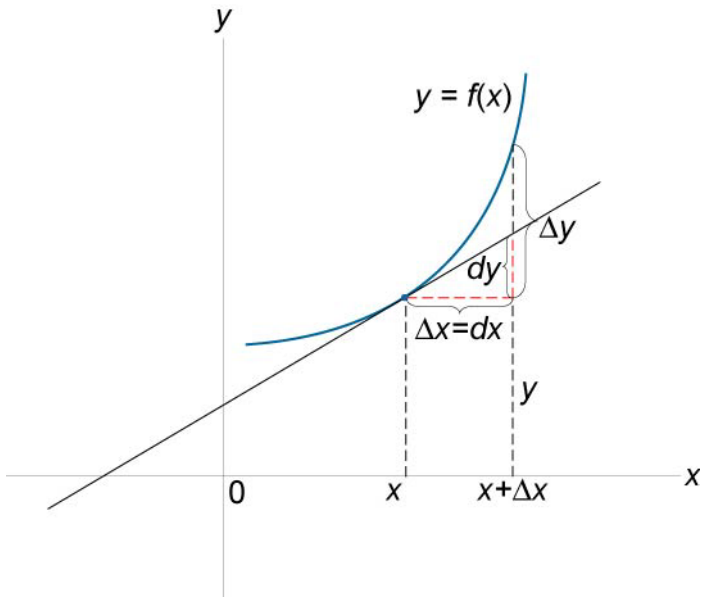

Figure 178.

840. Small Change in y

$$\Delta y = f(x + \Delta x) - f(x)$$

841. $$d(u + v) = du + dv$$

842. $$d(u - v) = du - dv$$

843. $$d(Cu) = Cdu$$

844. $$d(uv) = vdu + udv$$

845. $$d\left(\frac{u}{v}\right) = \frac{vdu - udv}{v^2}$$