

EXAMPLES

ON THE

INTEGRAL CALCULUS.

CHAPTER I.

ELEMENTARY INTEGRALS TO BE COMMITTED TO MEMORY.

$$(1.) \int \frac{dx}{x} = \log x.$$

$$(2.) \int \frac{dx}{a+bx^2} = \frac{1}{\sqrt{ab}} \tan^{-1} \left(x \sqrt{\frac{b}{a}} \right), \text{ or } \int \frac{dx}{a^2+x^2} \\ = \frac{1}{a} \tan^{-1} \frac{x}{a}.$$

$$(3.) \int \frac{dx}{\sqrt{a^2-x^2}} = \sin^{-1} \frac{x}{a}.$$

$$(4.) \int \frac{-dx}{\sqrt{a^2-x^2}} = \cos^{-1} \frac{x}{a}.$$

$$(5.) \int \frac{dx}{\sqrt{x^2 \pm a^2}} = \log \frac{(x + \sqrt{x^2 \pm a^2})}{a}.$$

$$(6.) \int \frac{dx}{\sqrt{2ax-x^2}} = \text{vers}^{-1} \frac{x}{a}.$$

$$(7.) \int \frac{dx}{\sqrt{x^2 \pm 2ax}} = \log (x \pm a + \sqrt{x^2 \pm 2ax}).$$

$$(8.) \int \frac{dx}{x\sqrt{x^2-a^2}} = \frac{1}{a} \sec^{-1} \frac{x}{a}.$$