

You are expected to know these formulas. Do not depend on this as a reference sheet. You must still also know the differentiation rules such as the chain rule, the product rule, and the quotient rule.

$$\frac{d}{du}(e^u) = e^u$$

$$\frac{d}{du}(\ln u) = \frac{1}{u}$$

---

$$\frac{d}{du}(\cos u) = -\sin u$$

$$\frac{d}{du}(\sin u) = \cos u$$

$$\frac{d}{du}(\tan u) = \sec^2 u$$

$$\frac{d}{du}(\cot u) = -\csc^2 u$$

$$\frac{d}{du}(\sec u) = \sec u \tan u$$

$$\frac{d}{du}(\csc u) = -\csc u \cot u$$

$$\frac{d}{du}(\sin^{-1} u) = \frac{1}{\sqrt{1-u^2}}$$

$$\frac{d}{du}(\tan^{-1} u) = \frac{1}{1+u^2}$$

$$\frac{d}{du}(\sec^{-1} u) = \frac{1}{u\sqrt{u^2-1}}$$

---

$$\frac{d}{du}(\cosh u) = \sinh u$$

$$\frac{d}{du}(\sinh u) = \cosh u$$

$$\frac{d}{du}(\tanh u) = \operatorname{sech}^2 u$$

$$\frac{d}{du}(\coth u) = -\operatorname{csch}^2 u$$

$$\frac{d}{du}(\operatorname{sech} u) = -\operatorname{sech} u \tanh u$$

$$\frac{d}{du}(\operatorname{csch} u) = -\operatorname{csch} u \coth u$$

---