

Let u be a differentiable function of x .

$$\frac{d}{dx} [\sinh u] = (\cosh u) u'$$

$$\frac{d}{dx} [\operatorname{csch} u] = -(\operatorname{csch} u \coth u) u'$$

$$\frac{d}{dx} [\cosh u] = (\sinh u) u'$$

$$\frac{d}{dx} [\operatorname{sech} u] = -(\operatorname{sech} u \tanh u) u'$$

$$\frac{d}{dx} [\tanh u] = (\operatorname{sech}^2 u) u'$$

$$\frac{d}{dx} [\coth u] = -(\operatorname{csch}^2 u) u'$$

Differentiate the following functions

$$f(x) = \sinh x^2$$

$$f(x) = \sinh^2 x$$

Differentiate the following functions

$$f(x) = \cosh 3x^2$$

$$f(x) = \cosh^2 3x$$

Differentiate the following functions

$$f(x) = \tanh x^3$$

$$f(x) = \operatorname{csch} 4x$$

Differentiate the following functions

$$f(x) = \operatorname{sech}^2 2x$$

$$f(x) = \operatorname{coth} (x^2 - 1)$$