Expansion of Hyperbolic Functions.

(1) $\sinh x = \dfrac{e^x - e^{-x}}{2} = x + \dfrac{x^3}{3!} + \dfrac{x^5}{5!} + \dfrac{x^7}{7!} + ...$

(2) $\cosh x = \dfrac{e^x + e^{-x}}{2} = 1 + \dfrac{x^2}{2!} + \dfrac{x^4}{4!} + \dfrac{x^6}{6!} + ...$

(3) $\tanh x = \dfrac{e^x - e^{-x}}{e^x + e^{-x}} = x - \dfrac{x^3}{3} + 2x^5 - \dfrac{17}{315}x^7 + ...$

The expansion of $\coth x, \operatorname{cosech} x$ does not exist because $\coth(0) = \infty, \operatorname{cosech}(0) = \infty$.