\[ y = \frac{v^2 - 2v \sqrt{v}}{v} = v \left( v^2 - 2 \sqrt{v} \right) \]

\[ y' = 2v - \sqrt{v} \]

\[ y'' = \frac{A}{B + C e^x} - \frac{A(C e^x)}{(B + C e^x)^2} \]

\[ y' = e^u (\cos u + c u) + e^u (-\sin u + c) \]

\[ \frac{dy}{dx} = \sec x - 2 \cos x \]

**Example:**

Find an equation for the tangent line to \( y = \sec x - 2 \cos x \) at \( \left( \frac{\pi}{3}, 1 \right) \)

\[ \text{See Maple eq from 5th edition} \]
Intermission:
what we really need to know is
what is:
\[
\lim_{h \to 0} \frac{\sinh h}{h} \quad \text{and} \quad \lim_{h \to 0} \frac{\cosh h - 1}{h}
\]

Start with \( \frac{\sinh h}{h} \)

\[
\frac{1}{a} \cosh \sinh \frac{1}{2} h \leq \frac{1}{2} \tan h
\]