

`sqrt((e^x*pi)/2x)`



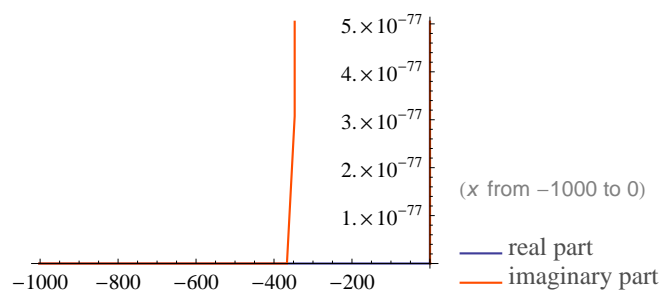
Input:

$$\sqrt{\frac{e^x \pi}{2x}}$$

Exact result:

$$\sqrt{\frac{\pi}{2}} \sqrt{\frac{e^x}{x}}$$

Plots:



Wolfram|Alpha: $\text{sqrt}((e^x \pi)/2x)$

Alternate form:

$$\frac{\sqrt{\frac{\pi}{2}} e^{\frac{x}{2} + i \pi \left[\frac{\arg(x)}{2\pi} - \frac{\text{Im}(x)}{2\pi} + \frac{1}{2} \right]}}{\sqrt{x}}$$

Alternate form assuming all variables are real and positive:

$$\frac{\sqrt{\frac{\pi}{2}} e^{x/2}}{\sqrt{x}}$$

Series expansion at $x == 0$:

$$\frac{\sqrt{\frac{\pi}{2}}}{\sqrt{x}} + \frac{1}{2} \sqrt{\frac{\pi}{2}} \sqrt{x} + \frac{1}{8} \sqrt{\frac{\pi}{2}} x^{3/2} + \frac{1}{48} \sqrt{\frac{\pi}{2}} x^{5/2} + \frac{1}{384} \sqrt{\frac{\pi}{2}} x^{7/2} + \frac{\sqrt{\frac{\pi}{2}} x^{9/2}}{3840} + O(x^{11/2})$$

Derivative:

$$\frac{d}{dx} \left(\sqrt{\frac{e^x \pi}{2x}} \right) = \frac{\sqrt{\frac{\pi}{2}} \left(\frac{e^x}{x} - \frac{e^x}{x^2} \right)}{2 \sqrt{\frac{e^x}{x}}}$$

Indefinite integral:

$$\int \sqrt{\frac{e^x \pi}{2x}} dx = \pi e^{-x/2} \sqrt{\frac{e^x}{x}} \sqrt{x} \operatorname{erfi} \left(\frac{\sqrt{x}}{\sqrt{2}} \right) + \text{constant}$$

Global minimum:

$$\min \left\{ \sqrt{\frac{e^x \pi}{2x}} \right\} = \sqrt{\frac{e \pi}{2}} \quad \text{at } x = 1$$

Limit:

$$\lim_{x \rightarrow -\infty} \sqrt{\frac{\pi}{2}} \sqrt{\frac{e^x}{x}} = 0$$

Alternative representations:

$$\sqrt{\frac{e^x \pi}{2x}} = \sqrt{\frac{z^x \pi}{2x}} \quad \text{for } z = e$$

Series representations:

$$\sqrt{\frac{e^x \pi}{2x}} = \sqrt{\frac{\pi}{2}} \sqrt{\frac{\sum_{k=0}^{\infty} \frac{x^k}{k!}}{x}}$$

Integral representation:

$$\sqrt{\frac{e^x \pi}{2x}} = \frac{1}{2} \sqrt{-\frac{i}{x} \int_{-i\infty+\gamma}^{i\infty+\gamma} (-x)^{-s} \Gamma(s) ds} \quad \text{for } (\gamma > 0 \text{ and } 2|\arg(-x)| < \pi)$$