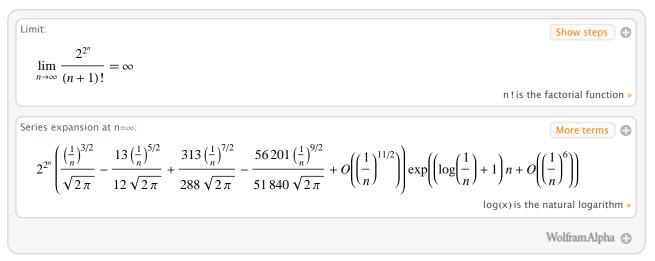
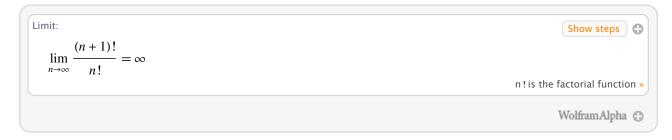


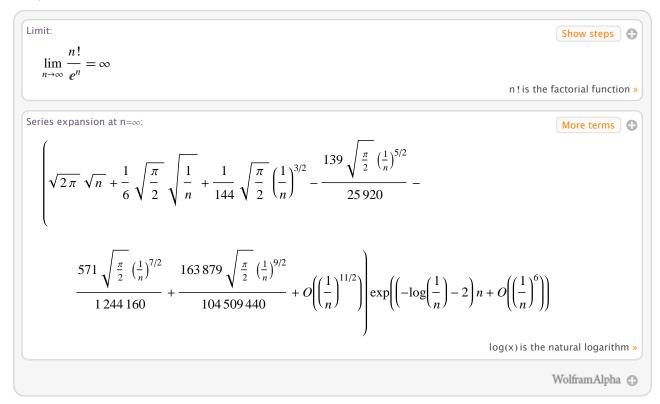
In[25]:= **‡** lim n -> inf of (2^2^n)/((n+1)!)



In[26]:= **| lim n -> inf (n+1)! / n!**



In[27]:= **‡** lim n->inf n! / e^n



In[29]:= **‡** lim n->inf e^n / (n*2^n)

Limit: $\lim_{n\to\infty}\frac{e^n}{n\,2^n}=\infty$ Wolfram Alpha ••

In[30]:= **‡ lim n->inf (n*2^n) / 2^n**





In[32]:= **‡ lim n->inf (3/2)^n / (n^(log(log(n))))**

Assuming "log" is the natural logarithm | Use the base 10 logarithm instead

$$\lim_{n\to\infty}\frac{\left(\frac{3}{2}\right)^n}{n^{\log(\log(n))}}=\infty$$

$$\log(x) \text{ is the natural logarithm } \otimes$$

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! lim n->inf (n^(log(log(n))) / (log(n))!

An attempt was made to fix mismatched delimiters

Assuming "log" is the natural logarithm | Use the base 10 logarithm instead

Limit:

Show steps

$$\lim_{n\to\infty}\frac{n^{\log(\log(n))}}{\log(n)!}=\infty$$

log(x) is the natural logarithm »

n!is the factorial function »

Series expansion at $n=\infty$:

More terms

$$\left(\frac{1}{\sqrt{2\pi}} + O\left(\left(\frac{1}{n}\right)^6\right)\right)$$

$$\exp\left(\left(-\log\left(-\log\left(\frac{1}{n}\right)\right)\log\left(\frac{1}{n}\right) - \log\left(\frac{1}{n}\right) - \left(\frac{1}{2} - \log\left(\frac{1}{n}\right)\right)\log\left(1 - \log\left(\frac{1}{n}\right)\right) - \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)\right)} + \frac{1}{360\left(1 - \log\left(\frac{1}{n}\right)\right)^3} - \frac{1}{1260\left(1 - \log\left(\frac{1}{n}\right)\right)^5} + \frac{1}{1680\left(1 - \log\left(\frac{1}{n}\right)\right)^7} - \frac{1}{1188\left(1 - \log\left(\frac{1}{n}\right)\right)^9} + \frac{691}{360360\left(1 - \log\left(\frac{1}{n}\right)\right)^{11}} + 1\right) + O\left(\left(\frac{1}{n}\right)^6\right)$$

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In[34]:= **| lim n->inf (log(n)!) / n^3**

Assuming "log" is the natural logarithm | Use the base 10 logarithm instead

Limit:

$$\lim_{n\to\infty} \frac{\log(n)!}{n^3} = \infty$$

- log(x) is the natural logarithm »
 - n!is the factorial function »

Show steps 🕕

More terms

Series expansion at $n=\infty$:

$$\left(\frac{\sqrt{2\pi}}{n^3} + O\left(\left(\frac{1}{n}\right)^6\right)\right)$$

$$\exp\left(\left(\log\left(\frac{1}{n}\right) + \left(\frac{1}{2} - \log\left(\frac{1}{n}\right)\right)\log\left(1 - \log\left(\frac{1}{n}\right)\right) + \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)\right)} - \frac{1}{360\left(1 - \log\left(\frac{1}{n}\right)\right)^3} + \frac{1}{1260\left(1 - \log\left(\frac{1}{n}\right)\right)^5} - \frac{1}{1260\left(1 - \log\left(\frac{1}{n}\right)\right)}\right) + \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)\right)} - \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)\right)} - \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)\right)}\right) + \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)\right)} - \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)} - \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)\right)} - \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)} - \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)\right)} - \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)\right)} - \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)\right)} - \frac{1}{12\left(1 - \log\left(\frac{1}{n}\right)} - \frac{1$$

$$\frac{1}{1680 \left(1 - \log\left(\frac{1}{n}\right)\right)^7} + \frac{1}{1188 \left(1 - \log\left(\frac{1}{n}\right)\right)^9} - \frac{691}{360360 \left(1 - \log\left(\frac{1}{n}\right)\right)^{11}} - 1 + O\left(\left(\frac{1}{n}\right)^6\right)\right)$$

Wolfram Alpha 🖨

Show steps 🕕

More terms 🕕

n[35]:= 📥

lim n->inf n^2 / (log(n!))

Assuming "log" is the natural logarithm | Use the base 10 logarithm instead

Limit:

$$\lim_{n \to \infty} \frac{n^2}{\log(n!)} = \infty$$

- n!is the factorial function »
- log(x) is the natural logarithm »

Series expansion at $n=\infty$:

$$\frac{n}{\log(n)-1} + \frac{\log\left(\frac{1}{n}\right) - \log(2\pi)}{2\left(\log(n)-1\right)^2} + \frac{\frac{\log^2\left(\frac{1}{n}\right)}{4\left(\log(n)-1\right)^2} + \frac{\log^2(2\pi)}{4\left(\log(n)-1\right)^2} - \frac{\log(2\pi)\log\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} - \frac{1}{12\left(\log(n)-1\right)}}{n\left(\log(n)-1\right)} + \frac{\log\left(\frac{1}{n}\right) - \log(2\pi)}{2\left(\log(n)-1\right)^2} + \frac{\log^2\left(\frac{1}{n}\right)}{4\left(\log(n)-1\right)^2} + \frac{\log^2\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} - \frac{\log(2\pi)\log\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} - \frac{\log(2\pi)\log\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} + \frac{\log^2\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} + \frac{\log^2\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} - \frac{\log(2\pi)\log\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} - \frac{\log(2\pi)\log\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} + \frac{\log^2\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} + \frac{\log^2\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} + \frac{\log^2\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} - \frac{\log(2\pi)\log\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} - \frac{\log(2\pi)\log\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)^2} + \frac{\log(2\pi)\log\left(\frac{1}{n}\right)}{2\left(\log(n)-1\right)} + \frac{\log(2\pi)\log\left(\frac{1}$$

$$\frac{1}{n^2 \left(\log(n) - 1\right)} \left(\frac{\log^3\left(\frac{1}{n}\right)}{8 \left(\log(n) - 1\right)^3} - \frac{\log^3(2\pi)}{8 \left(\log(n) - 1\right)^3} - \frac{3 \log(2\pi) \log^2\left(\frac{1}{n}\right)}{8 \left(\log(n) - 1\right)^3} + \frac{1}{8 \left(\log(n) - 1\right)^3} + \frac{1}$$

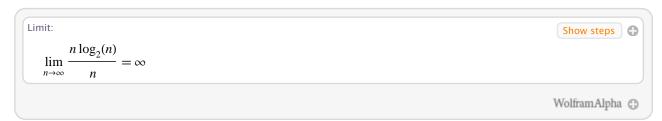
$$\frac{3\log^2(2\pi)\log(\frac{1}{n})}{8(\log(n)-1)^3} - \frac{\log(\frac{1}{n})}{12(\log(n)-1)^2} + \frac{\log(2\pi)}{12(\log(n)-1)^2} + \frac{1}{n^3(\log(n)-1)}$$

$$\frac{\log^2(\frac{1}{n})}{16(\log(n)-1)^4} + \frac{\log^4(2\pi)}{16(\log(n)-1)^4} - \frac{\log(2\pi)\log^3(\frac{1}{n})}{4(\log(n)-1)^4} - \frac{\log^3(2\pi)\log(\frac{1}{n})}{4(\log(n)-1)^4} - \frac{\log^2(\frac{1}{n})}{16(\log(n)-1)^3} + \frac{\log^2(2\pi)\log(\frac{1}{n})}{8(\log(n)-1)^4} - \frac{\log^2(2\pi)}{16(\log(n)-1)^3} + \frac{\log^2(2\pi)\log(\frac{1}{n})}{8(\log(n)-1)^4} - \frac{\log^2(2\pi)}{16(\log(n)-1)^3} + \frac{\log^2(2\pi)\log(\frac{1}{n})}{8(\log(n)-1)^3} + \frac{1}{360(\log(n)-1)} + \frac{1}{144(\log(n)-1)^2} + \frac{1}{144(\log(n)-1)^2} + \frac{1}{144(\log(n)-1)^2} + \frac{\log^2(2\pi)\log(\frac{1}{n})}{32(\log(n)-1)^5} - \frac{\log^2(2\pi)\log^2(\frac{1}{n})}{32(\log(n)-1)^5} - \frac{\log^2(2\pi)\log^2(\frac{1}{n})}{32(\log(n)-1)^5} - \frac{\log^2(2\pi)\log(\frac{1}{n})}{32(\log(n)-1)^5} - \frac{\log^2(2\pi)\log(\frac{1}{n})}{32(\log(n)-1)^5} - \frac{\log^2(2\pi)\log(\frac{1}{n})}{8(\log(n)-1)^4} + \frac{5\log^2(2\pi)\log^2(\frac{1}{n})}{8(\log(n)-1)^5} - \frac{\log^2(2\pi)\log(\frac{1}{n})}{8(\log(n)-1)^4} + \frac{5\log^2(2\pi)\log^2(\frac{1}{n})}{16(\log(n)-1)^5} - \frac{1}{16(\log(n)-1)^5} - \frac{1}{16(\log(n$$

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In[37]:= | lim n->inf (n^2) / (4^log base 2 of (n))

Limit: Show steps $\lim_{n \to \infty} \frac{n^2}{\Delta^{\log_2(n)}} = 1$ Wolfram Alpha In[38]:= **‡** lim n->inf (n log base 2 of (n)) / n



In[39]:= **| lim n->inf n / ((sqrt(2))^(log base 2 of (n))**



In[40]:= | lim n->inf ((sqrt(2))^(log base 2 of (n)) / (2^(sqrt(2 * log base 2 of (n)))

An attempt was made to fix mismatched delimiters $\lim_{n\to\infty} \frac{\sqrt{2}^{\log_2(n)}}{2^{\sqrt{2}\log_2(n)}} = \infty$ Wolfram Alpha \bullet





In[41]:= **! lim n->inf (log base 2 of (n))^(1/2) / (log(log(n))**

An attempt was made to fix mismatched delimiters Assuming "log" is the natural logarithm | Use the base 10 logarithm instead Limit: Show steps 🕕 log(x) is the natural logarithm » Series expansion at $n=\infty$: More terms $\frac{\sqrt{-\log\left(\frac{1}{n}\right)}}{\sqrt{\log(2)}\,\log\left(-\log\left(\frac{1}{n}\right)\right)} + O\left(\left(\frac{1}{n}\right)^6\right)$ WolframAlpha 🕀