WED 5-31-06

P. 420

$$e^{\ln 2} = x \qquad 2$$

$$\ln\left(e^{\ln 2}\right) = \ln x$$

$$\ln 2 \cdot \cancel{\ln e}^{\,1} = \ln x$$

$$\ln 2 = \ln x$$

$$\underline{\underline{2 = x}}$$

$$e^{\ln 3} =$$

$$* \quad \boxed{e^{\ln f(x)} = f(x)}$$

$$\boxed{\lim_{x\to\infty}\left(1+\frac{1}{x}\right)^{x} = ?}$$

$$f(x) = \left(1+\frac{1}{x}\right)^{x}$$

$$\ln(f(x)) = x\cdot\ln\left(1+\frac{1}{x}\right)$$

$$\ln(f(x)) = \frac{\ln\left(1+\frac{1}{x}\right)}{\frac{1}{x}}$$

$$\lim_{x\to\infty}\ln(f(x)) = \lim_{x\to\infty}\frac{\ln\left(1+\frac{1}{x}\right)}{\frac{1}{x}}$$

x

$$\lim_{x\to\infty} \ln(f(x)) = \lim_{x\to\infty} \frac{\ln\left(1+\frac{1}{x}\right)}{\frac{1}{x}}$$

← TAKE $\frac{dy}{dx}$

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Extend Page

$$= \lim_{x\to\infty} \frac{\left(\frac{1}{1+\frac{1}{x}}\right) \cdot \cancel{-\frac{1}{x^2}}\ 1}{\cancel{-\frac{1}{x^2}}\ 1}$$

$$= \lim_{x\to\infty} \left(\frac{1}{1+\frac{1}{x}}\right)$$

$$= \frac{1}{1+0}$$

$$= \underline{\underline{1}}$$

$$\therefore \lim_{x \to \infty} \left(1 + \frac{1}{x}\right)^{x}$$

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e^(1)
            2.718281828
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$$= \lim_{x \to \infty} f(x)$$

$$e^{\ln(f(x))} = f(x)$$

$$= \lim_{x \to \infty} e^{\ln(f(x))}$$

$$= e^{1}$$

$$= e$$

$$=$$

```
Plot1 Plot2 Plot3
\Y1=(1+1/X)^X
\Y2=
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=
```

X	Y_1
1000	2.7169
1E6	2.7183
1E9	2.7183
1E12	2.7183
~~1E15~~	~~[illegible]~~
~~1E20~~	~~1~~

Y_1=2.71828182846

Evil

X	Y_1
1000	2.7169
1E6	2.7183
1E9	2.7183

Y_1=2.718281827

(22) $\lim\limits_{y\to\frac{\pi}{2}} \left(\frac{\pi}{2}-y\right)\tan y = \lim\limits_{y\to\frac{\pi}{2}} \dfrac{\left(\frac{\pi}{2}-y\right)\cdot \sin y}{\cos y}$

$$= \lim_{y\to\frac{\pi}{2}} \frac{\left(\frac{\pi}{2}-y\right)\cdot \cos y + (-1)\cdot \sin y}{-\sin y}$$

$$= \lim_{y\to\frac{\pi}{2}} \frac{\frac{\pi}{2}\cdot \cos y - y\cdot \cos y - \sin y}{-\sin y}$$

$$= \frac{-1}{-1} = \underline{\underline{1}}$$

(24) $\lim_{x \to \infty} x \cdot \tan \frac{1}{x} = \lim_{x \to \infty} \frac{\tan \frac{1}{x}}{\frac{1}{x}}$

0

0

0