4.4f

Note Title 10/25/2007

Use Calculus to determine appropriate window or use calculator to approximate important values.

ex. $f(x) = \dfrac{e^x}{x^2-9}$ from calculator

VA: $x = 3$ conc up $(3,\infty)$

HA: $y = 0$ conc. down $(-\infty, 3)$

$$f' = \frac{(x^2-9)e^x - e^x(2x)}{(x^2-9)^2} = \frac{e^x(x^2-2x-9)}{(x^2-9)^2}$$

$f' = 0 \Rightarrow x^2 - 2x - 9 = 0$

$$x = \frac{+2 \pm \sqrt{4+4\cdot 9}}{2} = 1 \pm \frac{1}{2}\sqrt{40}$$

≈ 4.162 or -2.162

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-3 $\quad -2.16 \quad$ 3 $\quad 4.16$

↑

zoom in here → see VA $x = -3$