Subject: Re: Math Question #1
Posted by archerman on Tue, 11 Nov 2008 11:08:33 GMT
View Forum Message <> Reply to Message

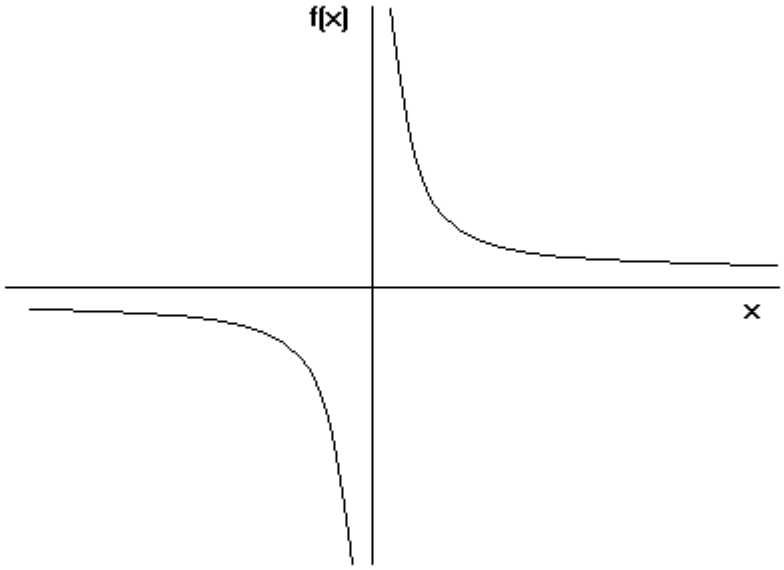
nopol10 wrote on Tue, 11 November 2008 11:38Actually, lim(5/x,x,0) (Limit of 5/x as x -> 0) is not infinity as limit of 5/x as x->0 from the negative side and the limit of 5/x as x->0 from the positive side are not equal. Therefore the limit is undefined. It is infinity only when x->0 from the positive side and negative infinity when x->0 from the negative side.

you are right. the graph of y=5/x is similar to y=1/x which is like:

so limit doesn't exist.

File Attachments

1) 1overx.gif, downloaded 838 times



2) solution.JPG, downloaded 584 times

$$\lim_{x\to 0} \frac{\sin 5x}{2-2\cos x}$$

$$\lim_{x\to 0} \frac{\sin 5x}{2(1-\cos x)}$$

$\cos x = 1-2\sin^2(x/2)$

$1-\cos x = 2\sin^2(x/2)$

$$\lim_{x\to 0} \frac{\sin 5x}{4\sin^2(x/2)}$$ (eqn. 1)

$$\lim_{x\to 0} \frac{\frac{5\sin 5x}{5x}}{\frac{\sin^2(x/2)}{(x/2)^2}\,x}$$ (when simplified, we have eqn.1)

$$\lim_{x\to 0} \frac{5}{x}$$

for 0- limit is at - infinity
for 0+ limit is at +infinity =>limit doesn't exist.