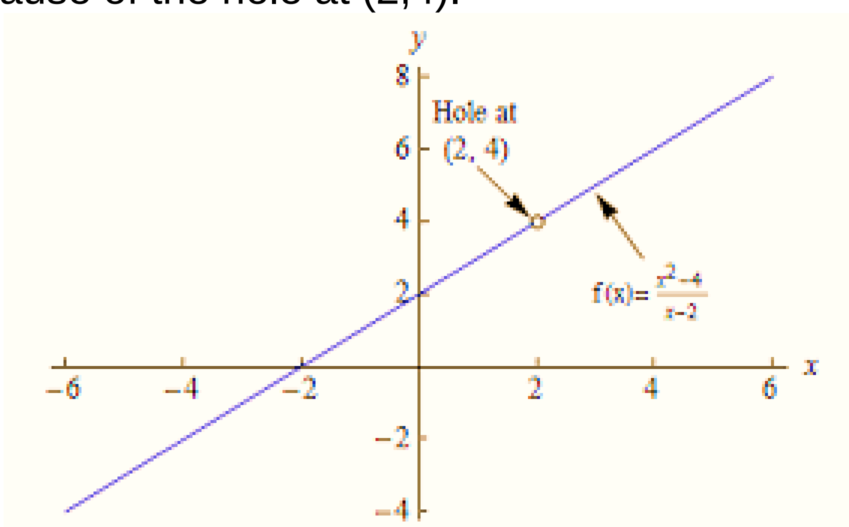
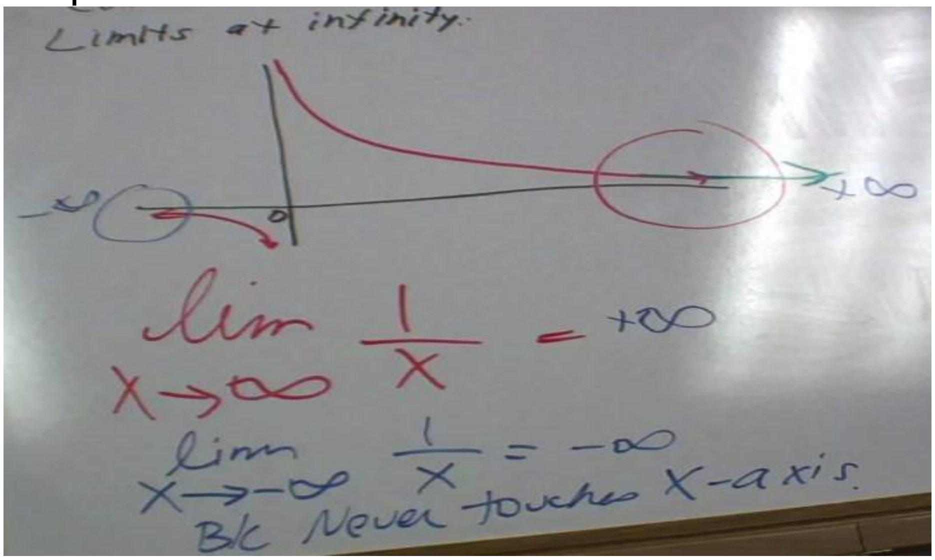
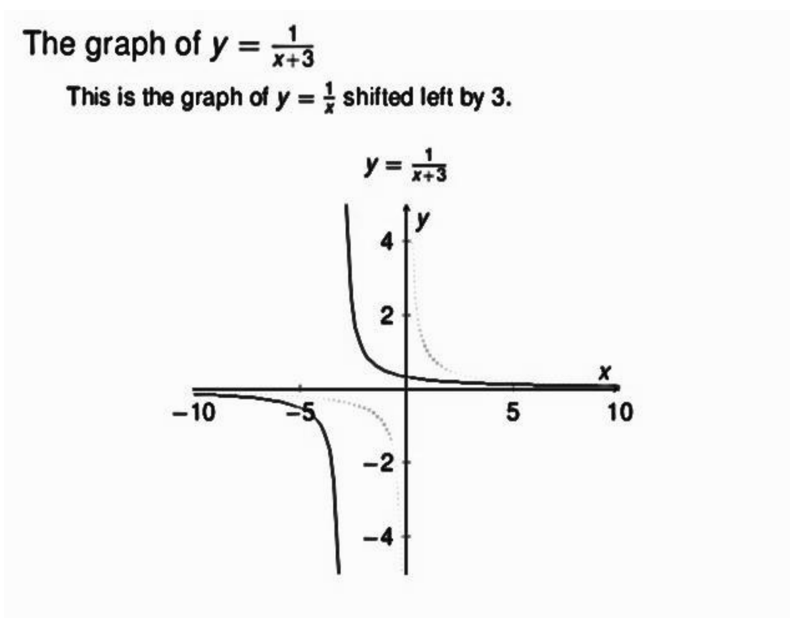
Name________________________________ Date ____________

Anticipation Guide

End of Quarter Calculus Review on Limits

Directions: Pair up with a partner. Write **True or False** in the **"Before"** column. After the lesson, complete the **"After"** column.

Before	Given Statement	After
	1. A limit is a number that represents the behavior of function values.	
	2. A limit "approaches" a function value but never reaches it.	
	3. A limit can never equal a function value because limits are only about what a function is "approaching".	
	4. When asked to "find the limit", the limit refers to the x-value under the notation. For instance, $\lim_{x\to -3^-}\frac{1}{x+3}=-\infty$, the limit is -3 in this case.	
	5. The arrow in the limit notation implies direction from the left only. For example: $\lim_{x\to 2}\frac{1}{(x-2)}$ means as x approaches 2 from the left only.	
	6. In the graph below, the limit does not exist because of the hole at (2,4). 	
	7. The infinity symbol ∞ represents a very large number.	
	8. If a limit equals infinity, "$=\infty$", then the limit exists. (Ex: $\lim_{x\to\infty}2e^x=\infty$)	

<table>
<tr><td></td><td>9. The solution and interpretation to the problem below for $\lim_{x\to\infty}\frac{1}{x}=\infty$ is correct and hence, a good example of an infinite limit.

</td><td></td></tr>
<tr><td></td><td>10. $\lim_{x\to -3}\frac{1}{x+3}\to d.n.e.$, because left hand limit does not equal the right hand limit: $-\infty \neq +\infty$

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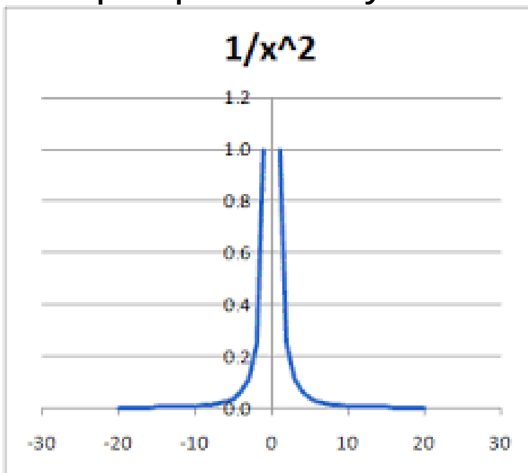
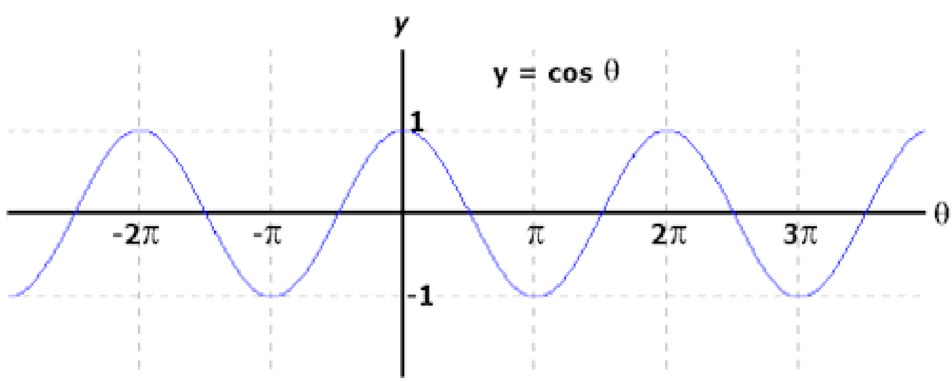
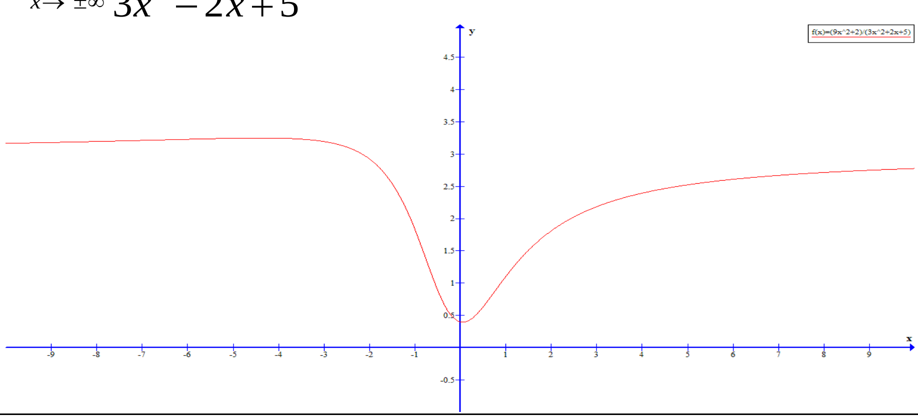
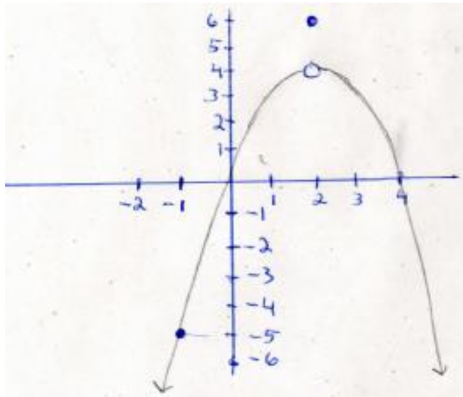
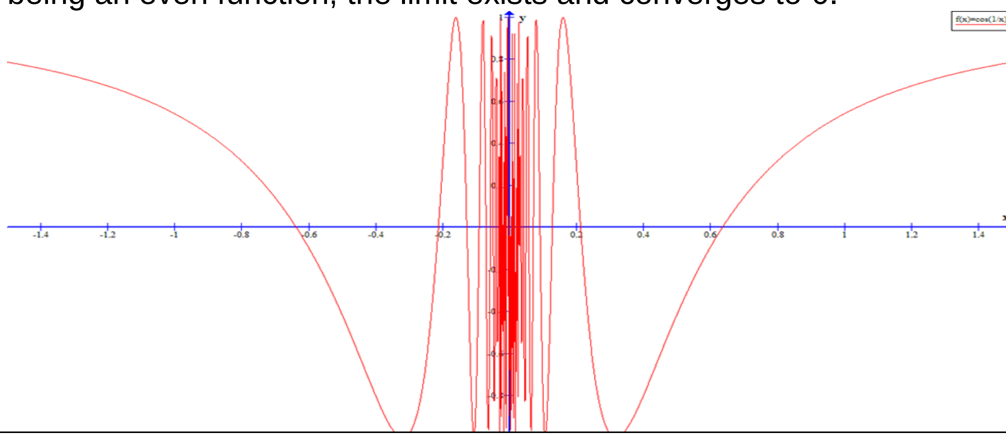
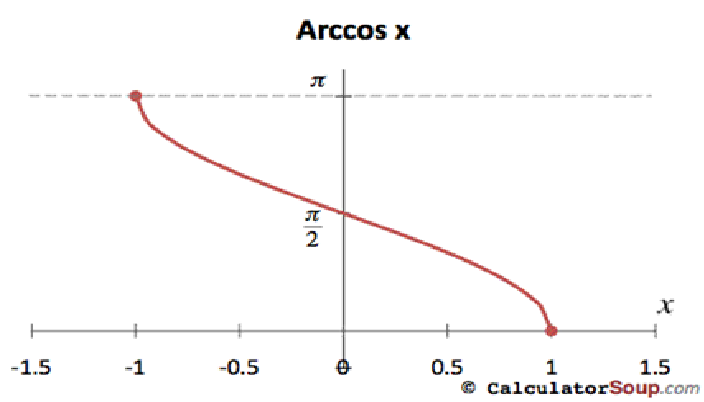
	11. Given the graph of $\lim_{x \to 0} \frac{1}{x^2}$, the limit exists and equals infinity, because the left hand limit and right hand limit both equal plus infinity.  	
	12. In the graph above for $\lim_{x \to 0} \frac{1}{x^2}$, the vertical asymptote at x=0 is a limit because it is like a brick wall that you can't go past.	
	13. The graph of $\lim_{\theta \to \infty} \cos\theta$ has 2 limits: 1 and -1.  	
	14. The limit is the horizontal asymptote for: $\lim_{x \to \pm\infty} \frac{9x^2+2}{3x^2-2x+5}$ 	

	15. The graph below is classified as a quadratic function. 	
	16. Above, the point (2,6) is not on the graph of the function.	
	17. The domain of the function above is (0,4) and range is $(-\infty, 6]$	
	18. Even though $\lim_{x\to 0}\cos\frac{1}{x}$ is not defined at 0, due to symmetry of being an even function, the limit exists and converges to 0. 	
	19. The function on a finite interval domain [-1,1], the limits are pi and 0. $\lim_{x\to -\infty}\arccos x = \pi,$ and $\lim_{x\to\infty}\arccos x = 0$ 	
	20. $\lim_{x\to 0}\arccos x$, there is no limit (or hole) at pi/2 because you can walk right over it.	