

Name \_\_\_\_\_

Date \_\_\_\_\_ per \_\_\_\_\_

## Pathman

## Algebra II – Calc

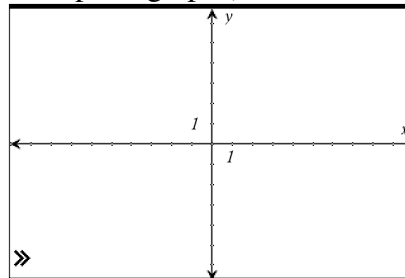
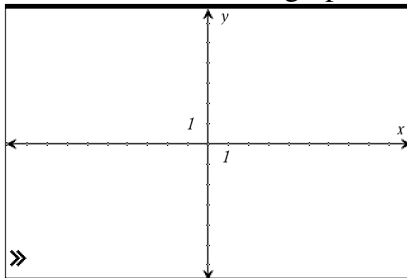
Objective: Practice translations with asymptotes.

Instructions: Show work.

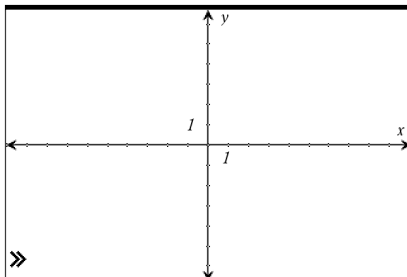
1. Graph on your TI-Nspire  $f_1(x) = \frac{1}{x}$ ,  $f_2(x) = \frac{1}{x^2}$ ,  $f_3(x) = \frac{1}{x^3}$ , and  $f_4(x) = \frac{1}{x^4}$ .

Describe observations verbally.

Now describe them graphically (& use words to explain graphs)



2. Predict what  $y = -\frac{1}{x}$  will look like.

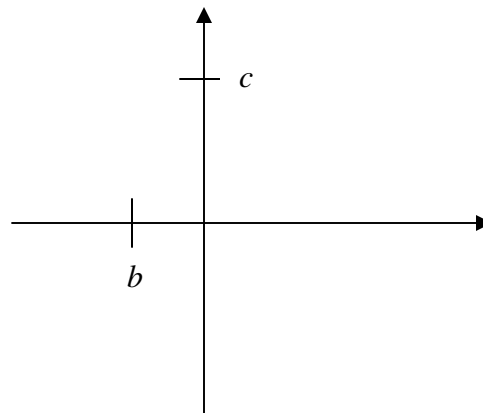


Now graph it on your TI-Nspire. Were you correct? \_\_\_\_\_ Fix it if you were not.

3. What do you call the line that the graph approaches? \_\_\_\_\_  
(if you don't know you will soon find out)
4. What do you know about transformations? Use the function  $f(x + b) + c$  to describe how it differs from  $f(x)$ .

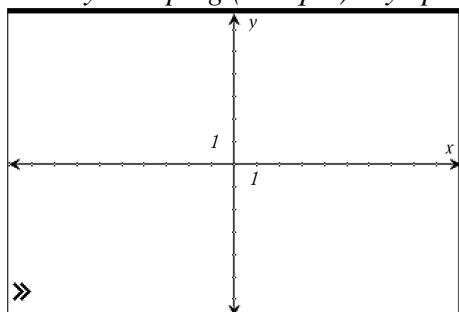
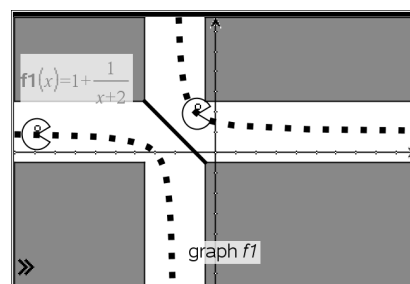
5. Graph  $y = \frac{1}{(x+b)} + c$ .

[Do you know why I put the denominator in parentheses?  
It will help you not make a mistake when you graph it  
on your TI-Nspire (or just use  $\text{ctrl} \left( \frac{\square}{\square} \right)$ .)]

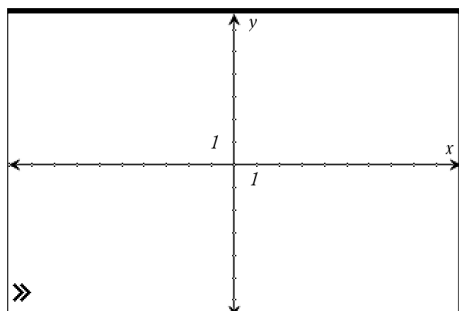


6. You are now ready for Pathman.tns. Sketch your graph and WRITE your equation for at least 3 mazes. (Press **ctrl menu** on the graph f1 to change the attributes if you want to make the function look like Pacman's dots.)

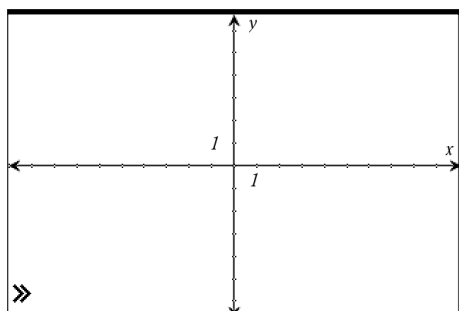
*Try a sloping (oblique) asymptote in level 3.*



Equation: \_\_\_\_\_



Equation: \_\_\_\_\_



Equation: \_\_\_\_\_

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**Explore some more:** [http://mathforum.org/library/drmath/sets/select/dm\\_asymptote.html](http://mathforum.org/library/drmath/sets/select/dm_asymptote.html) has some nice information on asymptotes: etymology, horizontal, vertical and oblique asymptotes. Pathman.tns was written by Nelson Sousa and is available at <http://www.nelsonsousa.pt/>