

Math 1513 - College Algebra

Written Assignment 9 - Due 2012.03.10

Directions: Please answer the following question in complete sentences. Be sure to label all geometric objects in any illustrations. I will accept an answer in a scanned image format, in a Word document or as a pdf.

Problem: Consider the function $f(x) = \frac{ax^2 + k}{bx^2 + h}$ where $a, b, k,$ and h are all constants with $a, b > 0$.

- (a) What can you say about asymptotes and intercepts of this function if $h, k > 0$?
- (b) Now assume that $k < 0$ and $h > 0$. How does this affect the asymptotes? The intercepts?
- (c) If $b = 1$ and $a > 1$, how does this affect the results from part (b)?
- (d) How is the graph affected if $k > 0$ and $h < 0$?
- (e) Find values of $a, b, h,$ and k that create a function with a horizontal asymptote at $y = \frac{3}{2}$, x -intercepts at $(-2, 0)$ and $(2, 0)$, a y -intercept of $(0, -4)$ and no vertical asymptotes.