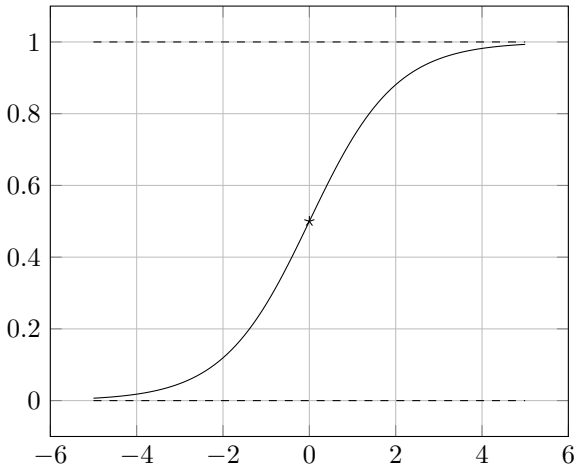
Name:_____ **Handout: August 28**

The following is the graph of a *Logistic Growth Curve* $L(x) = 1/(1 + e^{-x})$.



The logistic growth curve has horizontal asymptotes at $y = 0$ and $y = 1$, as is indicated by the dashed lines. Furthermore, its *inflection point* is the point $(0, 0.5)$.

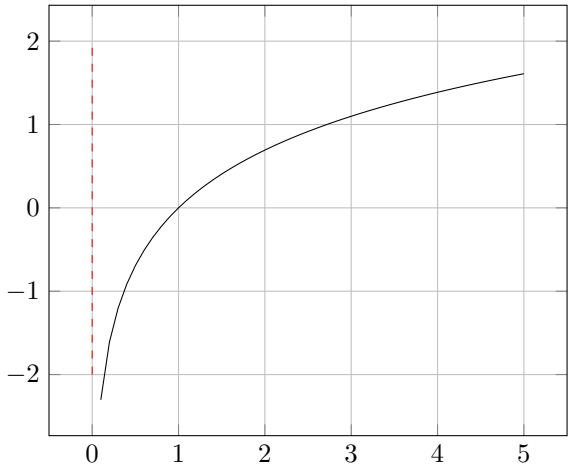
1. What are the horizontal asymptotes and inflection points of the following functions? (Show your work!)

   (a) $L(-1.5x + 3)$

   (b) $-1.5 \cdot L(x) + 3$

   (c) $-1.5 \cdot L(-1.5x + 3) + 3$

2. The following is a graph of the *natural logarithm* function $\ln(x)$. Its domain is $(0, \infty)$.



(a) Give the domain of the following functions:

i. $\ln(1 - x)$

iii. $\ln(1) - \ln(x)$

ii. $\ln(5 + x)$

iv. $1 - \ln(x)$

(b) What is the domain of $\ln(|x|)$?

(c) What is the domain of $\sqrt{\ln(x)}$?