

Math 27, HW #15 Selected Problems

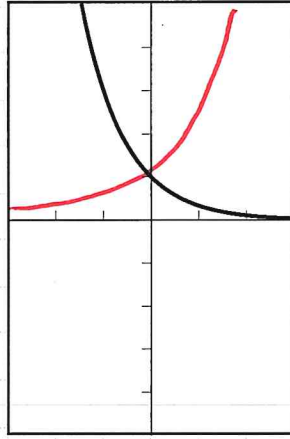
Pg. 199, #23 Find  $\log_2 16$  without using a calculator.

Suppose that  $\log_2 16 = x$ . Then  $16 = 2^x \Rightarrow x = 4$

So  $\log_2 16 = 4$

Pg. 199, #52  $y = -\log_3 x$

Graph of  $y = \log_3 x$



(c)

$$y = -\log_3 x$$

Pg. 200, #81 Find  $\ln e^2 = \log_e e^2 = \boxed{2}$

From the inverse property

$$\ln e^x = x \quad f(f^{-1}(x)) = x$$

Pg 201, # 109

**109. Psychology** Students in a mathematics class were given an exam and then tested monthly with an equivalent exam. The average scores for the class are given by the human memory model

$$f(t) = 80 - 17 \log_{10}(t + 1), \quad 0 \leq t \leq 12$$

where  $t$  is the time in months.

- (a) What was the average score on the original exam ( $t = 0$ )?
- (b) What was the average score after 2 months?
- (c) What was the average score after 11 months?

Verify your answers in parts (a), (b), and (c) using a graphing utility.

$$a) f(0) = 80 - 17 \log_{10}(1) = 80$$

$$b) f(2) = 80 - 17 \log_{10} 3 = 71.89$$

$$c) f(11) =$$

Graph:

