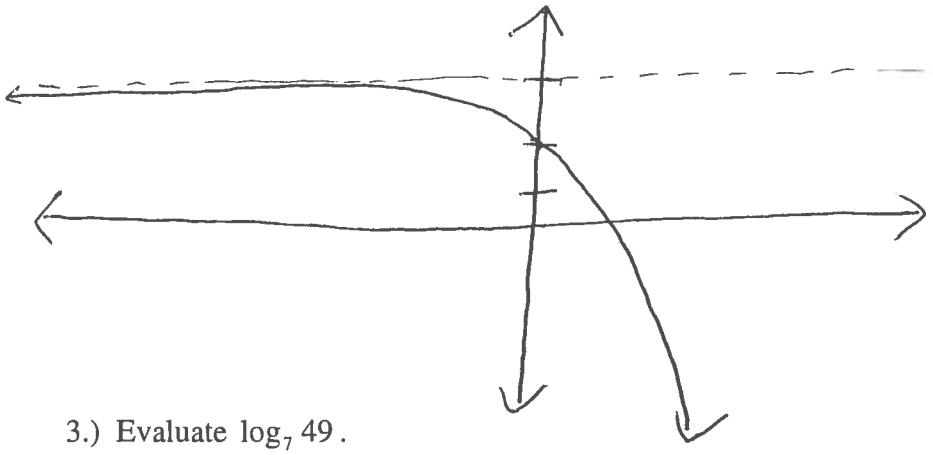
Refresher Course Math 1050 and 1060 Practice Problems Set 6 Fall 2007

1.) Find $f(5)$ if $f(x)=2^{x-3}$.

$$f(5) = 2^{5-3} = 2^2 = \boxed{4}$$

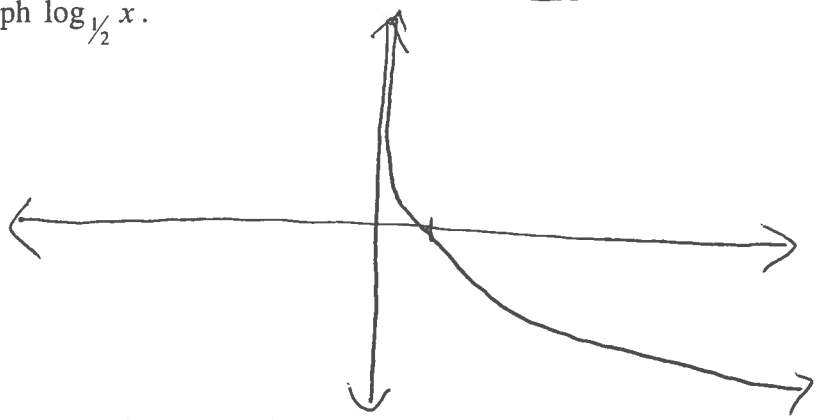
2.) Graph $f(x)=-e^{x+1}+3$.



3.) Evaluate $\log_7 49$.

$$\log_7 7^2 = \boxed{2}$$

4.) Graph $\log_{1/2} x$.



5.) Expand $\log_2\left(\sqrt{x^2(x+2)}\right)$.

$$= \frac{1}{2}\log_2\left(x^2(x+2)\right)$$

$$= \frac{1}{2}\log_2(x^2) + \frac{1}{2}\log_2(x+2)$$

$$= \boxed{\log_2 x + \frac{1}{2}\log_2(x+2)}$$

6.) Write $\ln x - 2\ln[x+2+\ln(x-2)]$ as a single log with coefficient 1.

$$\ln\left(\frac{x}{(x+2+\ln(x+2))^2}\right)$$

Not sure he really means single log here, as that's impossible.

7.) Solve each of the following:

a.) $-e^{2x}+5=-10$

$e^{2x}=15$

$$x=\frac{\ln(15)}{2}$$

b.) $e^{2x}-3e^{x}+2=0$

$(e^x-2)(e^x-1)$

$x=\ln 2, \ln 1$

So, $x=\ln 2$ or $x=0$

c.) $2\log_5 3x=4$

$\log_5 3x=2$

$3x=5^2$

$3x=25$

$$x=\frac{25}{3}$$

d.) $\ln(x-2)+\ln(2x-3)=2\ln x$

$\ln\left((x-2)(2x-3)\right)=\ln x^2$

$\Rightarrow (x-2)(2x-3)=x^2$

$2x^2-7x+6=x^2$

$x^2-7x+6=0$

$$\frac{7\pm\sqrt{49-4(1)(6)}}{2}$$

$$\frac{7\pm\sqrt{25}}{2}=\frac{7\pm5}{2}=\frac{12}{2},\frac{2}{2}$$

$=6, 1$

$(x-6)(x-1)$

So, $x=6,1$