

MH 166 Homework #4 Key

1a. $2^{3.4} = 10.5561$

c. $e^{2.3} = 9.9742$

e. $4^{-1.5} = .125$

g. $e^{-.95} = .3867$

i. $(\frac{1}{3})^{1.7} = .1545$

k. $(\ln 2)^{-1.8} = 1.9343$

b. $\log_{15} 13 = \frac{\ln 13}{\ln 15} = .9472$

d. $\log_{\pi} 63 = \frac{\ln 63}{\ln \pi} = 3.6193$

f. $\log_{0.3} 19 = \frac{\ln 19}{\ln 0.3} = -2.4456$

h. $\log_{10} 57.2 = \frac{\ln 57.2}{\ln 10} = 1.4595$

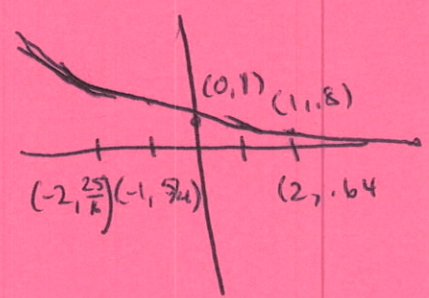
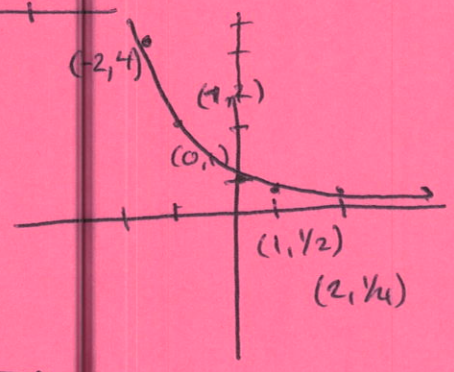
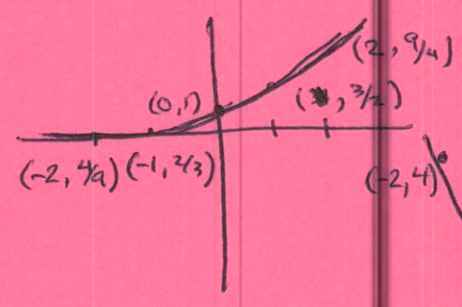
j. $\ln(11) = 2.3979$

l. $\log_{\frac{1}{6}} 99 = \frac{\ln 99}{\ln(\frac{1}{6})} = -2.5646$

2. a. $f(x) = (\frac{3}{2})^x$

b. $g(x) = (\frac{1}{2})^x$

c. $h(x) = 0.8^x$



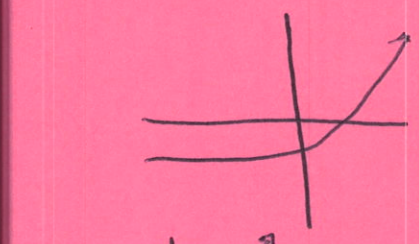
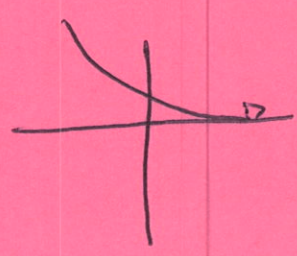
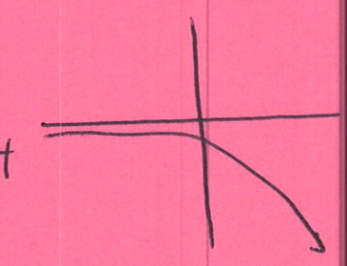
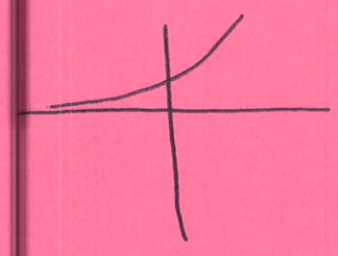
3a. $f(x) = 2^x$ $f(x+1) = 2^{x+1}$

b. $-f(x) - 1 = -2^x - 1$

c. $3f(x-1) - 4 = 3(2^{x-1}) - 4$

d. $g(x) = 2^{-x}$

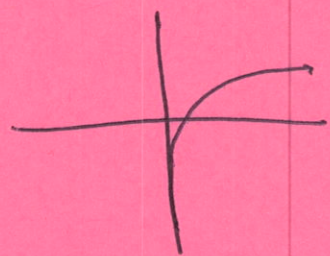
e. $g(x) = \frac{1}{2}f(x-2) + 3$
 $= \frac{1}{2}(2^{x-2}) + 3$



3a. inverses

$$x = 2^{y+1}$$

$$\log_2(x) - 1 = y$$

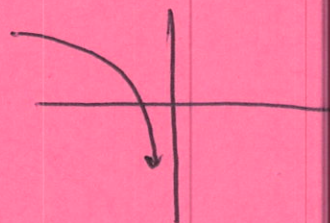


b. $x = -2^y - 1$

$$x + 1 = -2^y$$

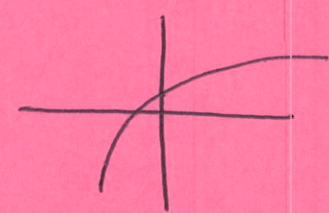
$$-(x + 1) = 2^y$$

$$\log_2(-(x + 1)) = y$$

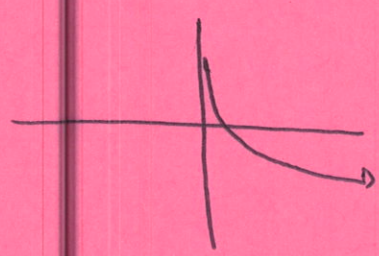


c. $x = 3(2^{y-1}) - 4$

$$\frac{(x+4)}{3} = 2^{y-1} \rightarrow \log_2\left(\frac{x+4}{3}\right) + 1 = y$$



d. $x = 2^{-y} \rightarrow -\log_2 x = y$



e. $x = \frac{1}{2}(2^{y-2}) + 3$

$$x - 3 = \frac{1}{2}(2^{y-2})$$

$$2(x - 3) = 2^{y-2}$$

$$\log_2(2(x - 3)) + 2 = y$$

