Pre Calc BC Logs **Name**_____

1. Express as a single log:

a) $\frac{1}{2}\log(x) + 4\log(x) - 3\log(x)$

b) $\ln\left(\frac{e}{\sqrt{x}}\right) - \ln\sqrt{e^3 x}$

2. Given that log(m) = a, and log(n) = b, express each expression below in terms of a and b.

a) $\log\left(\frac{m}{n}\right)$

b) $\log(10m)$

c) $\log\left(\sqrt{\frac{m^5}{1000}}\right)$

d) $\log(.01m \cdot 1000^b)$

3. Given $\log_b a = x$ express each of the following in terms of x.

a) $\log_a \frac{1}{b}$

b) $\log_{\sqrt{b}}\left(\frac{b}{a}\right)$

c) $\log_{\frac{1}{b}} \sqrt{a}$

3. Solve the equations below algebraically.

a) $\log_5(x) = 4$

b) $\log_2(10 + 3x) = 5$

c) $\ln(x) = -2$

d) $\log(x) + \log(x - 9) = 1$

e) $\log(x+1) + \log(x - 1) = 2$

f) $\ln(x+1) - \ln(x) = \ln(4)$

g) $\ln(\ln(x)) = 2$

h) $(\log_3(x))^2 - \log_3(x^2) = 3$

i) $\log_3(\log_4(x)) = 1$

j) $\log_4(x) + \log_8(x) = \frac{25}{6}$

k) $\log_4(x+3) + \log_4(x-5) = \frac{7}{2}$