Solving Exponential Equations (8.4) p412 day 5 pass in assignments share food

10. Write each expression as a single logarithm p412 day 5 in simplest form. State any restrictions on the variable. 12c, 16 a)  $\log_5 x + \log_5 \sqrt{x^3} - 2 \log_5 x$ 12. Show that **b)**  $\log_{11} \frac{x}{\sqrt{x}} + \log_{11} \sqrt{x^5} - \frac{7}{3} \log_{11} x$ and  $c \neq 1$ . a)  $\log_c 48$  $\log_{11} \frac{x}{x^{\frac{1}{2}}} + \log_{11} x^{\frac{3}{2}} - \log_{11} x^{\frac{3}{2}}$ **b)** 7 log<sub>c</sub> 4 c)  $\frac{1}{2}(\log_c$ 11. Write each in simplest the variabl a)  $\log_2 (x^2)$ **b)**  $\log_7 (x^2)$ c) 2 log<sub>8</sub> (x

16. The logarithmic scale used to express the pH of a solution is pH = -log [H+], where [H+] is the hydrogen ion concentration, in moles per litre (mol/L).
a) Lactic acidosis is medical condition characterized by elevated lactates and a blood pH of less than 7.35. A patient is severely ill when his or her blood pH is 7.0. Find the hydrogen ion concentration in a patient with a blood pH of 7.0.
b) Acid rain is caused when compounds from combustion react with water in the atmosphere to produce acids. It is generally accepted that rain is acidic if its pH is less than 5.3. The average pH of rain in some regions of Ontario is about 4.5. How many times as acidic as normal rain with a pH of 5.6 is acid rain with a pH of 4.5?
c) The hair conditioner that Alexan and the pH of 3.5.

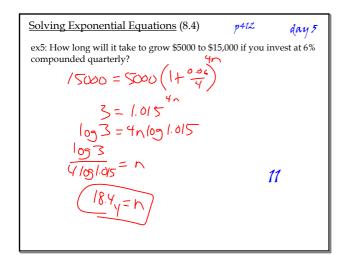
c) The hair conditioner that Alana uses is 500 times as acidic as the shampoo she uses. If the shampoo has a pH of 6.1, find the pH of the conditioner.

7.0 = -log H -7 = 109 H H = 10-7 ~01/1

Solving Exponential Equations (8.4) p412 day 5 ex1: Lead-210 is radioactive. If 8g decays to 6.75g in 5 years, then what is the half life? 6.75 =  $8(\frac{1}{5})^{\frac{1}{5}}$ 0.84375 = 12 5 109 0.84375 = 109 (2) 1090.84375 - 5109(2) = 20.4 years

Solving Exponential Equations (8.4) day 5  $2^{x} = 5 \qquad |\partial g_{o}|^{5} \qquad 2^{3x-1} = 100$   $|\partial g_{o}|^{2} = |\partial g_{o}|^{5} \qquad |\partial g_{o}|^{2} = |\partial g_{o}|^{6}$  $x \log 2 = \log 5$   $3x - 1 = \frac{\log 100}{\log 2}$   $x = \frac{\log 5}{\log 2}$   $3x = \frac{\log 100}{\log 2} + 1$ 

Solving Exponential Equations (8.4) day 5 ex3: Solve  $4^{x+3} = 7^x$ (x+3)/034 = x 607 x1094+3694 = x1097 3/054 = x log 7 - x log 4 7 1094=x(1097-1094) 10364 = × (105 74) 1051.75 = X 7a 7.4 =x



Solving Exponential Equations (8.4) 
$$p412 = day 5$$

hw:  $p412#5d$ , 7b, 8ab, 11

 $|96 \times = 16$ 
 $|69 \times = 6$ 
 $|84 \times = 16$ 
 $|94 \times = 6$