

**ROUND ALL ANSWERS TO THE NEAREST TENTH, UNLESS STATED OTHERWISE**

1) Evaluate each of the following. Only the final answer is required (you do not need to show any work). **All answers must be exact.**

a)  $\log_7 49$

b)  $\log_3 216 - \log_3 8$

c)  $\log 100^9$

d)  $\log_k k^{90210}$

e)  $\log_{\frac{2}{3}} \left( \frac{16}{81} \right)$

f)  $\log_2 \sqrt[3]{16}$

2) Evaluate  $\log_9 85$ .

3) Solve the following equations.

a)  $\log_5 x = 4$

b)  $\log_9(4x + 11) = \frac{1}{2}$

c)  $9^{4x} = 27^{x+10}$

4) Solve the following equations.

a)  $\log(2x+1) = \log(x-3) + \log 7$

b)  $6(2)^{x+4} - 81 = 130$

c)  $\log_2(3x+1) + \log_2(x+8) = 3$

d)  $5^{x+2} = 6^{x+1}$

5) The sound level of a dog barking is 83 dB. The sound level of a thunderclap is 102 dB. How many times louder is the thunderclap than the dog?

- 6) If it takes 251 days for 80 g of a radioactive substance to decay to 30.5 g, determine the half-life of the substance to the nearest tenth of a day.
- 7) Cassy Oh wants to be a millionaire. When she is 19 years old, she deposits \$3700 into an account that pays 5.75%/a compounded monthly. If Cassy does not make any more deposits or withdrawals in the account, **how old would she be** when the account reaches a value of \$1 000 000?
- 8) Determine the Richter scale measurement for an earthquake with approximately twice the intensity of tremor measuring 3.5 on the Richter scale?

9) Consider the function  $f(x) = -2\log_3(x+4)$ .

a) State the domain and range of  $f(x)$ .

b) State the equation of the asymptote for the graph of  $f(x)$ .

c) Determine the values of the function's  $x$  and  $y$  intercepts.

d) Draw a sketch of the graph of  $f(x)$ .

