

ALBERTA DISTANCE LEARNING CENTRE
Mathematics 30-1
MAT3791
Workbook 4.1

Student's Questions and Comments

FOR STUDENT USE ONLY
Student Name: _____

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Assigned to _____
Marked by _____
Date received _____

Summary

	Marks Earned	Total Marks	Percent
Practice 4.1A	I have ____ /8 and ____ %		
Practice 4.1B	I have ____ /8 and ____ %		
Explore Your Understanding 4.1			

Teacher's Comments:
_____ Teacher's Signature

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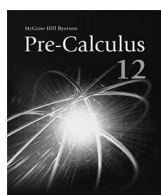
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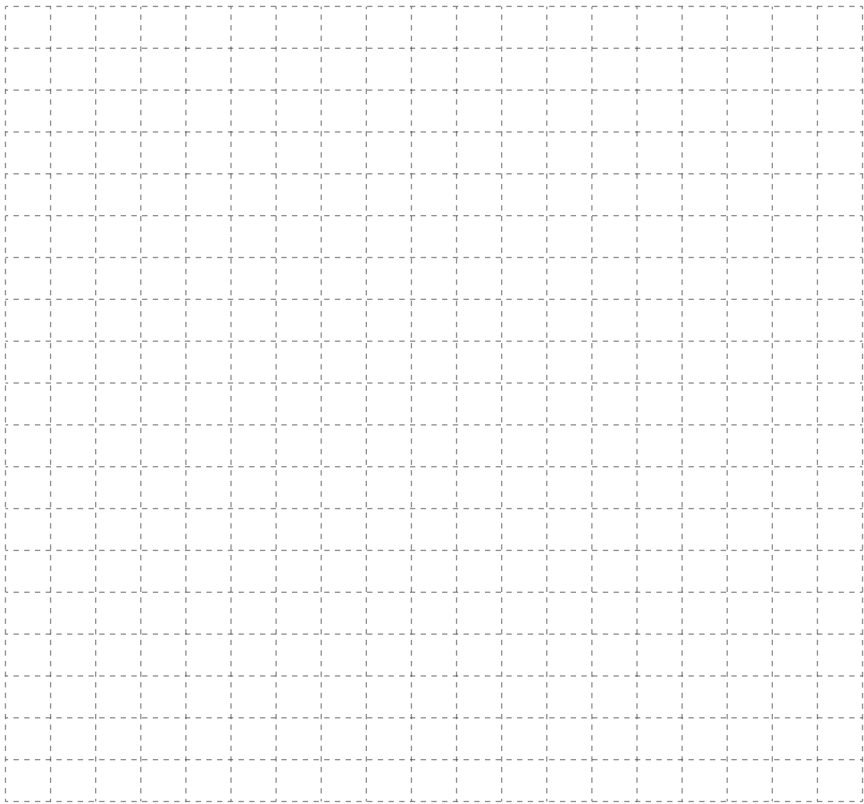


Explore Your Understanding Assignment 4.1

This assignment includes 15 marks. You are expected to complete **13 marks** worth of work. If you complete more than this, all completed questions will be used to assign a grade. For example, if you complete all 15 marks worth of work, your assignment total will be 15 instead of 13. You can also complete a question and label it “DO NOT MARK” if you are not confident in your work. Your teacher will then give feedback on your response, which will help clarify any misconceptions, but will not count it towards your required mark total. Please contact your teacher if you have any questions.

- ① 1. a. Use a numerical example to explain the relationship between exponents and logarithms.

- 2
- b. Use a graphical example to explain the relationship between exponential functions and logarithmic functions.



2. Convert each exponential equation to a logarithmic equation, and convert each logarithmic equation to an exponential equation.

①

a. $3^2 = 9$

①

b. $\log_7 16\,807 = 5$

①

c. $a = \sqrt{b}$

3. Explain how each logarithmic expression can be either estimated or evaluated without using a calculator.

①

a. $\log_3 81$

①

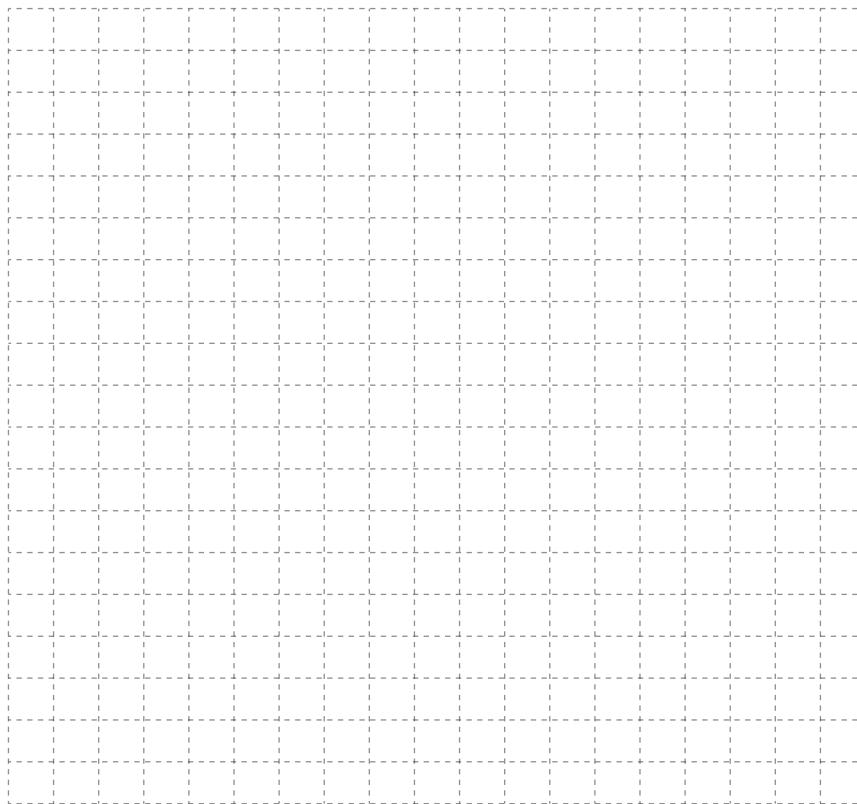
b. $\log_4 50$

①

c. $\log_5 0.0016$

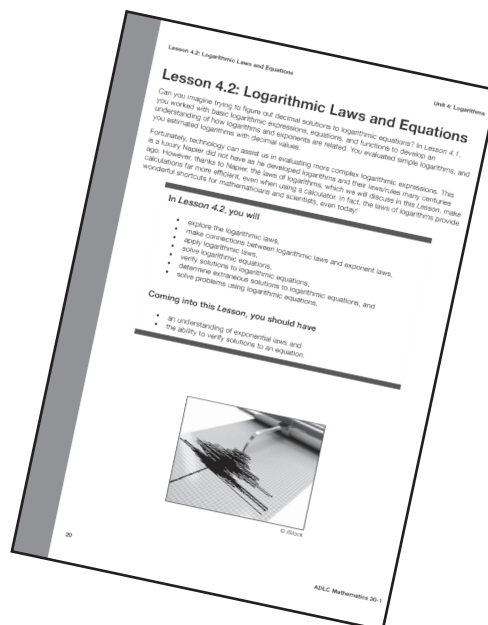
- ② 4. a. Explain how the graph of $f(x) = \log_b x$ can be used to graph $g(x) = p \log_b (q(x-r)) + s$.

- ① b. Sketch the graph of $g(x) = 4 \log_4 \left(\frac{1}{2}(x-1) \right) + 6$.



- ③ 5. The pH of a solution is given by $\text{pH} = -\log[\text{H}^+]$, where $[\text{H}^+]$ is the hydrogen ion concentration in moles per litre. The average pH of human blood is 7.4. A human will die if the pH of her blood goes below 7.0 or above 7.8. What is the difference in hydrogen ion concentration between the allowable pHs? Solve this problem algebraically.

When this workbook is complete, submit it using a method described at the beginning of this *Workbook*. Next, complete *Test Your Understanding Quiz 4.1* online in Moodle. When complete, return to the *Module* and begin *Lesson 4.2*.



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