ALBERTA DISTANCE LEARNING CENTRE
Mathematics 30-1
MAT3791
Workbook 7.2

<table>
<tr><td>Student's Questions and Comments</td></tr>
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FOR STUDENT USE ONLY

Student Name:

_____

Summary

	Marks Earned	Total Marks	Percent
Practice 7.2A	**I have ____ /8 and ____%**		
Practice 7.2B	**I have ____ /8 and ____%**		
Practice 7.2C	**I have ____ /8 and ____%**		
Explore Your Understanding 7.2			

Teacher's Comments:

_____

Teacher's Signature

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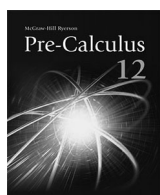
Pre-Calculus 12
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☰ Explore Your Understanding Assignment 7.2

This assignment includes 17 marks. You are expected to complete **14 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 17 marks worth of work, your assignment total will be 17 instead of 14. 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.
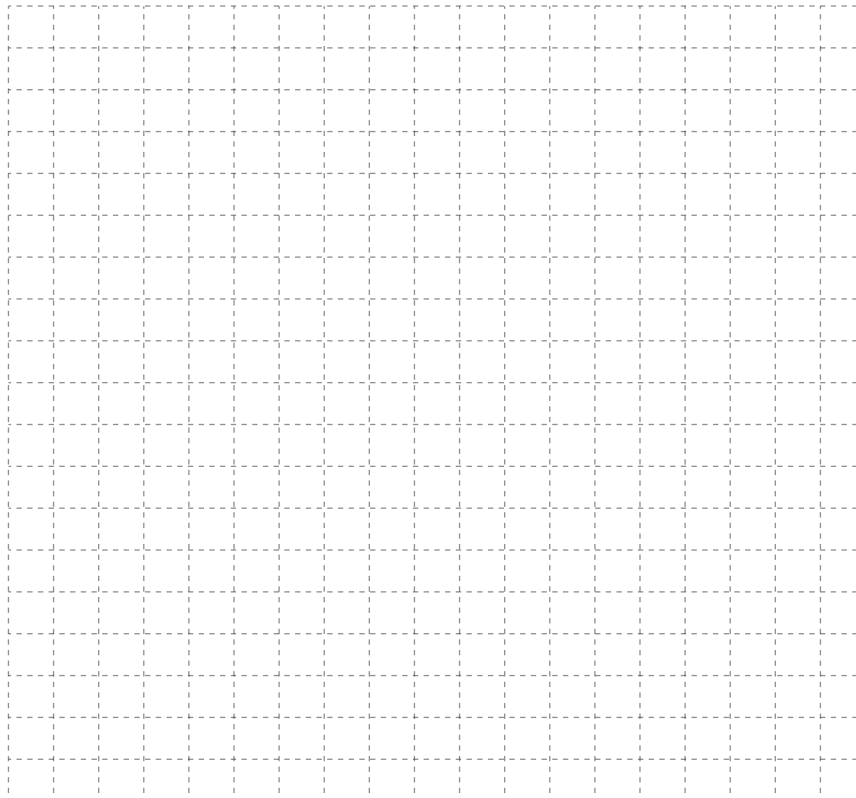
1. Consider the function $f(x) = 4(x - 1)$.

    (1)   a. Determine the equation of the inverse of this function.

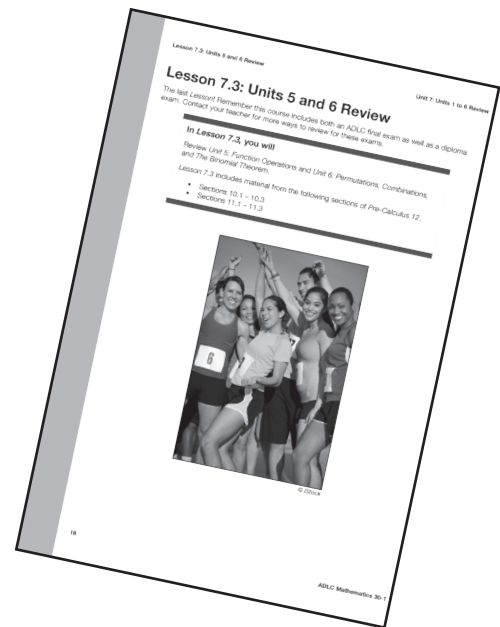   (1)   b. Sketch the graph of the function and its inverse.

(2)   c. Determine any invariant points. State where invariant points will always occur in inverse
               relations, and explain why.

2.   A sinusoidal function passes through $(0°, 2)$, has a maximum at $(20°, 5)$, and a
     subsequent minimum point at $(60°, -1)$.

(2)   a. Determine the amplitude, period, and range of this function.

(1)   b. Determine a possible sine function with these characteristics.

(1)   c. Determine a possible cosine function with these same characteristics.

3.   The function $f(x) = \log_b(x + 2)$ passes through the point $(14, 2)$.

(1)   a. Determine the value of b.

(1)   b. Determine the value of n if the function also passes through the point $(n, 3)$.

(1)   c. Determine the value of m if the function also passes through the point $(6, m)$.

4.   The formula $\beta = 10 \log\left(\frac{I}{I_0}\right)$ can be used to calculate the sound level, β decibels, where I is
      the intensity of the sound and I_0 is a reference intensity equal to $10^{-12}\,W/m^2$. A conversation
      between two people is approximately $60\,dB$, while the threshold of pain caused by sound
      is considered to be $130\,dB$.

(2)   a. Determine how many times as intense the threshold of pain is than a conversation.

(1)

b. Determine the sound level, to the nearest tenth of a decibel, if the conversation intensity is tripled.

5. An amount of $\$5\,000$ is invested at $5\%/\text{a}$, compounded monthly.

(1)

a. Determine the value of the investment after 6 years.

(2)

b. Determine the length of time required for the investment to triple in value.

When this workbook is complete, submit it using a method described at the beginning of this *Workbook*. Next, complete *Test Your Understanding Quiz 7.2* online in Moodle. When complete, return to the Module and begin *Lesson 7.3*.

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