ALBERTA DISTANCE LEARNING CENTRE
Mathematics 30-1
MAT3791
Workbook 1.3

Student's Questions and Comments	FOR STUDENT USE ONLY	FOR ADLC USE ONLY
	Student Name:	**Assigned to**
		Marked by
		Date received

Summary

	Marks Earned	Total Marks	Percent
Practice 1.3A	**I have ____ /8 and ____%**		
Practice 1.3B	**I have ____ /8 and ____%**		
Explore Your Understanding 1.3			

Teacher's Comments:

Teacher's Signature

Alberta Distance Learning Centre website:

http://www.adlc.ca

The Internet can be a valuable source of information. However, because publishing to the Internet is neither controlled nor censored, some content may be inaccurate or inappropriate. Students are encouraged to evaluate websites for validity and to consult multiple sources.
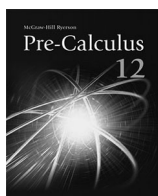
Pre-Calculus 12
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Explore Your Understanding Assignment 1.3

This assignment is worth 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 your 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 questions.

1. Consider the function $f(x) = \dfrac{2x^2 + x - 1}{x^2 - 2x - 3}$.

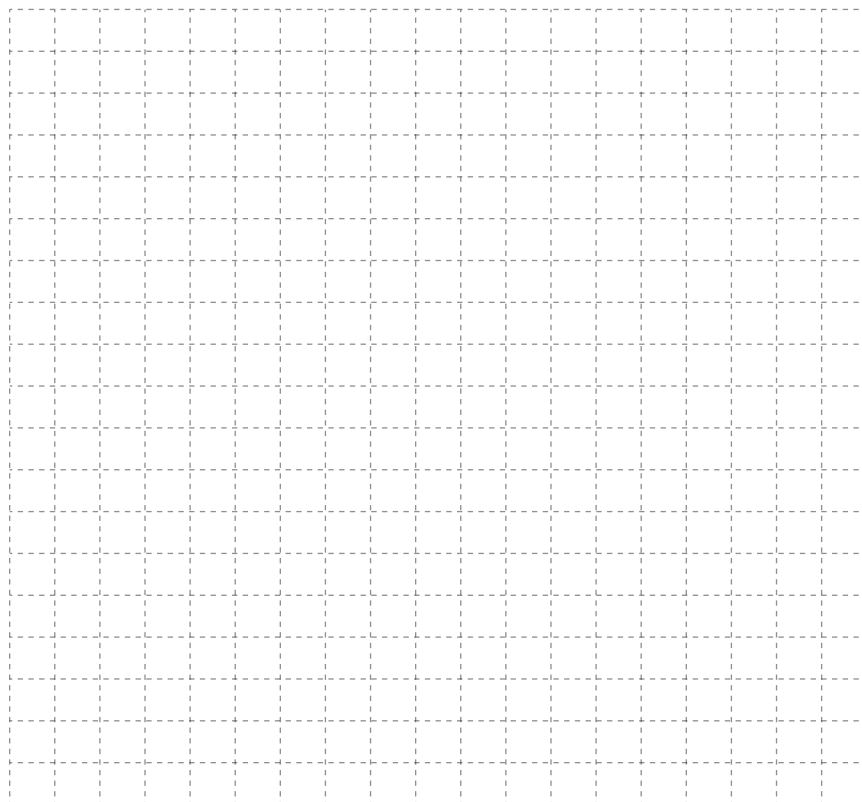①   a. Factor the numerator and denominator, if possible.

②   b. Complete the following table for f.

Equation(s) of asymptote(s), if applicable	
Point(s) of discontinuity, if applicable	
Domain	
Range	

(1)

    c. Sketch a graph of $y = f(x)$. Label the key characteristics. Refer to the course graphing standards.

    2. Consider the rational function $f(x) = \dfrac{(x+2)(x-1)(x+a)}{(x-3)(x+b)}$.

        Decide if each of the following scenarios is possible for the graph of $y = f(x)$. If it is possible, state values for a and b that make it so. If not possible, explain why not.

(1)

    a. Exactly two x-intercepts, one point of discontinuity, and one vertical asymptote.

_____

_____

(1)

    b. Exactly three points of discontinuity.

_____

_____

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(1)   c.   Exactly two vertical asymptotes and two x-intercepts .

_____

_____

3.   Explain why each of the following rational function scenarios is true. (Hint: Think about what the rational function would reduce to at or near the value that makes the specified factor equal to zero.)

(1)   a.   If a particular factor occurs in the numerator, but not in the denominator, there is a corresponding zero of the function.

_____

_____

_____

(1)   b.   If a particular factor occurs in the denominator, but not in the numerator, there is a corresponding vertical asymptote on the graph of the function.

_____

_____

_____

_____

(1)   c.   If a particular factor occurs in both the numerator and denominator, there is a corresponding point of discontinuity on the graph of the function.

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4. Consider the equation $\dfrac{x^2 + x}{3x + 6} - \dfrac{2}{x + 2} = 0$

(2) a. Solve the equation graphically. Describe the steps used.
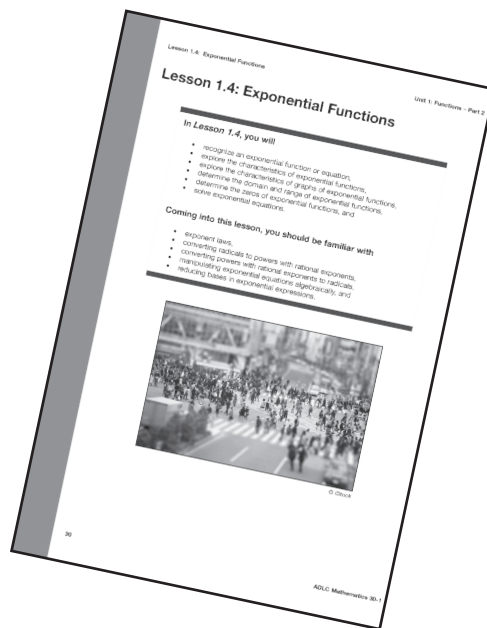
(2) b. Solve the equation algebraically.

(1) c. How are the zeros of $f(x) = \dfrac{x^2 + x}{3x + 6} - \dfrac{2}{x + 2}$, the roots of $\dfrac{x^2 + x}{3x + 6} - \dfrac{2}{x + 2} = 0$, and the x-intercepts of the graph of $y = f(x)$ related?

When this workbook is complete, submit it using a method described at the beginning of this *Workbook*. Next, complete *Test Your Understanding Quiz 1.3* online in Moodle. When complete, return to the *Module* and begin *Lesson 1.4.*

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