# ALBERTA DISTANCE LEARNING CENTRE
## Mathematics 30-1
### MAT3791
## Workbook 1.1

**Student's Questions and Comments**

**FOR STUDENT USE ONLY**

**Student Name:**

_____

**FOR ADLC USE ONLY**

**Assigned to**

_____

**Marked by**

_____

**Date received**

_____

**Summary**

| | Marks Earned | Total Marks | Percent |
|---|---|---|---|
| Practice 1.1A | **I have ____ /8 and ____%** | | |
| Practice 1.1B | **I have ____ /8 and ____%** | | |
| Practice 1.1C | **I have ____ /8 and ____%** | | |
| Explore Your Understanding 1.1 | | | |

**Teacher's Comments:**

_____

**Teacher's Signature**

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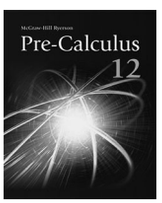


*Pre-Calculus 12*
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## Explore Your Understanding Assignment 1.1

This assignment includes 18 marks. You are expected to complete **15 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 18 marks worth of work, your assignment total will be 18 instead of 15. 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. If $f(x) = 2x + 5$, then the graphs of $y = f(x)$ and $y = \sqrt{f(x)}$ will have two common points.

(1) a. What are the $y$-coordinates of these common points?

(2) b. Determine the $x$-coordinates of these common points, and then state the points.

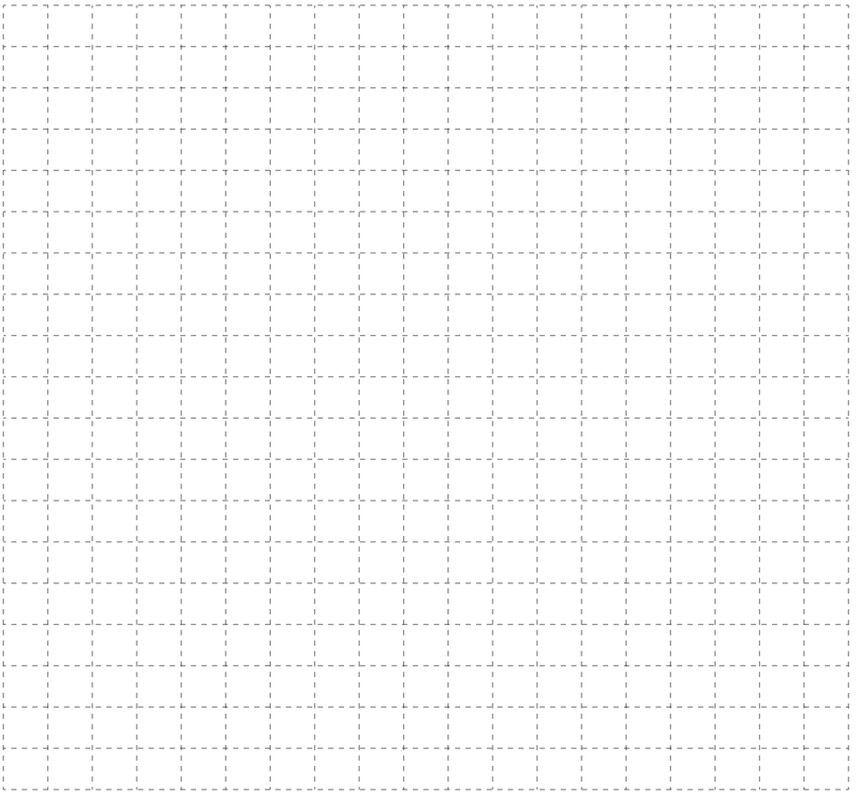
2. The area of a square can be determined from its length using the formula $A = l^2$, where $A$ represents the area and $l$ represents the side length.

(1) a. Express the side length of a square as a function of its area. (Hint: The function will be of the form $l(A) =$ ____.)

(1) b. Complete the table of values using a variety of $A$-values and the corresponding $l(A)$-values.

| $A$ | $l(A)$ |
|---|---|
| 1 | 1 |
| 2 | $\sqrt{2}$ |
| | |
| | |
| | |
| | |

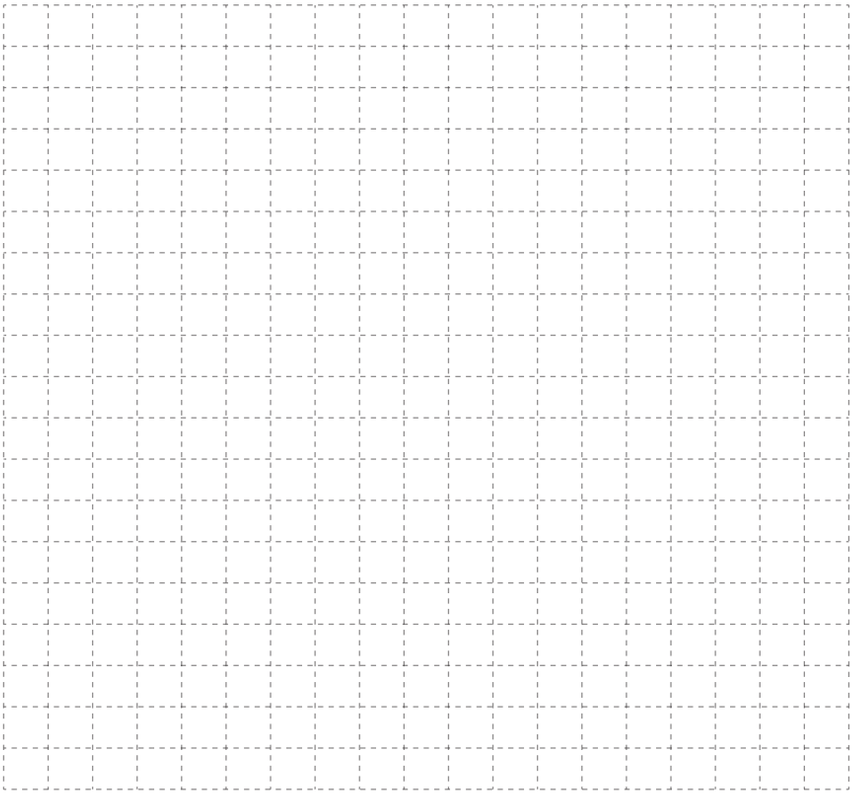
(1) c. Use the table of values to sketch a graph of the relationship. Make sure to label the axes and the function.



(1) d. State the domain and range of $l(A)$. Explain.

3. Consider the function $f(x) = -3x + 6$.

(1) a. Sketch the graph of $y = f(x)$.



(1) b. Explain how points on the graph of $y = f(x)$ can be mapped to points on the graph of $y = \sqrt{f(x)}$. In other words, if you know the point $(x, y)$ lies on the graph of $y = f(x)$, what is the corresponding point on the graph of $y = \sqrt{f(x)}$?

(1) c. Use the strategy described in b. to determine the coordinates of some points on the graph of $y = \sqrt{f(x)}$ , and then graph $y = \sqrt{f(x)}$ on the grid in part a.

| $x$ | $\sqrt{f(x)}$ |
|---|---|
| | |
| | |
| | |
| | |

(2) d. Determine the coordinates of any invariant points between the two functions. Explain how to be certain these are invariant points and not simply intersections of the graphs.

4. Consider the equation $\sqrt{-x-1} = x+3$.

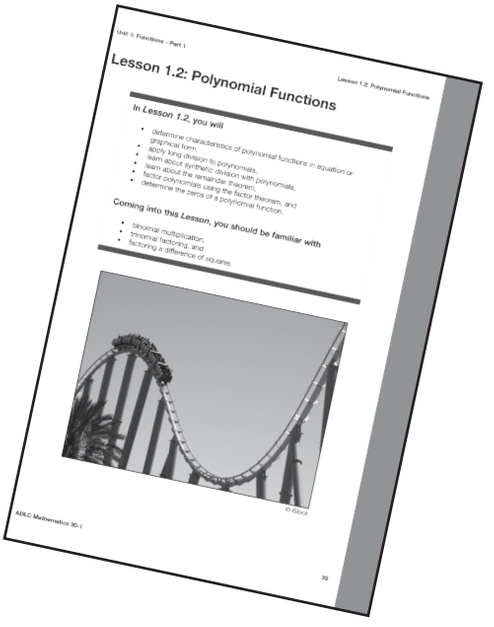
(2) a. Solve the equation algebraically.

(1) b. Explain how the equation can be solved graphically.

(1) c. Solve the equation graphically.

(2) d. For which solution method is it most important to be aware of the potential for extraneous solutions? How can an extraneous solution be identified?

When this workbook is complete, submit it using a method described at the beginning of this *Workbook*. Next, complete *Test Your Understanding Quiz 1.1* online in Moodle. When complete, return to the *Module* and begin *Lesson 1.2.*


Unit 1: Functions - Part 1

Lesson 1.2: Polynomial Functions

Lesson 1.2: Polynomial Functions

In *Lesson 1.2*, you will

- determine characteristics of polynomial functions in equation or graphical form,
- apply long division to polynomials,
- learn about synthetic division with polynomials,
- learn about the remainder theorem,
- factor polynomials using the factor theorem, and
- determine the zeros of a polynomial function.

Coming into this *Lesson*, you should be familiar with

- binomial multiplication,
- trinomial factoring, and
- factoring a difference of squares.

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