ALBERTA DISTANCE LEARNING CENTRE
Mathematics 30-1
MAT3791
Workbook 3.2

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

Student Name:

_____</td><td>FOR ADLC USE ONLY

Assigned to
_____

Marked by
_____

Date received
_____</td></tr>
</table>

Summary

	Marks Earned	Total Marks	Percent
Practice 3.2A	**I have ____ /8 and ____%**		
Practice 3.2B	**I have ____ /8 and ____%**		
Practice 3.2C	**I have ____ /8 and ____%**		
Practice 3.2D	**I have ____ /8 and ____%**		
Explore Your Understanding 3.2			

Teacher's Comments:

_____
Teacher's Signature

Printed in Canada

Alberta Distance Learning Centre has made every effort to acknowledge original sources and to comply with copyright law. If errors or omissions are noted, please contact Alberta Distance Learning Centre so that necessary amendments can be made.

For Users of Alberta Distance Learning Centre Courseware
Much time and effort is involved in preparing learning materials and activities that meet curricular expectations as determined by Alberta Education. We ask that you respect our work by honouring copyright regulations.

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.
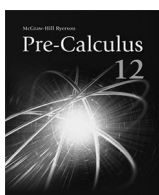
Pre-Calculus 12
© McGraw-Hill Ryerson Ltd.

☰ Explore Your Understanding Assignment 3.2

This assignment includes 20 marks. You are expected to complete **17 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 20 marks worth of work, your assignment total will be 20 instead of 17. 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. The graph of the function $y = a\sqrt{b(x-h)} + k$ is shown.
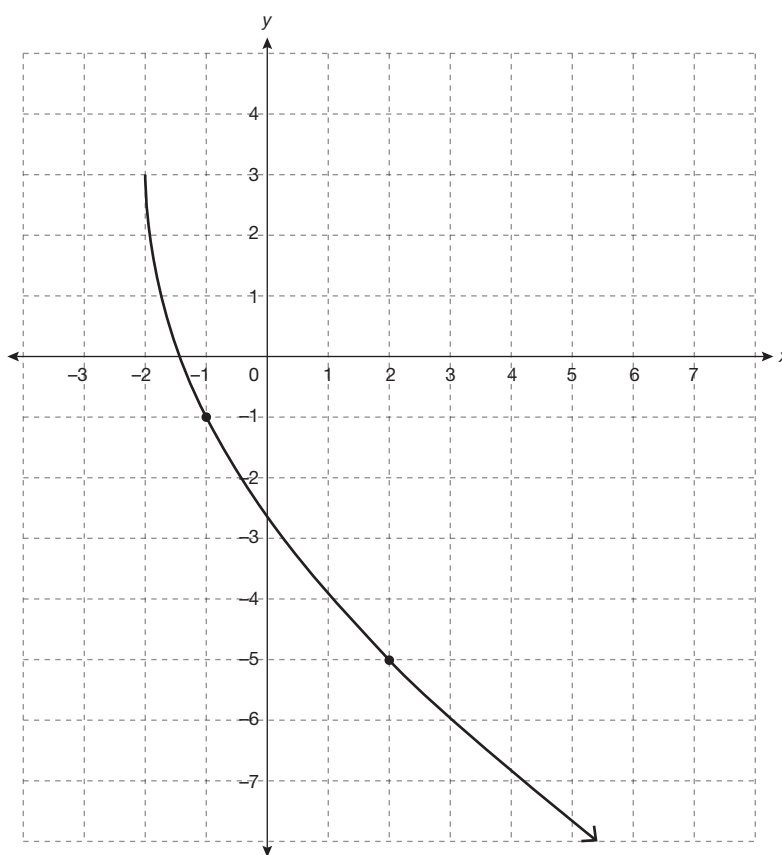
②   a.   Determine the equation of this function if it was produced from $y = \sqrt{x}$ using a vertical stretch and not a horizontal stretch.

①

b. Determine the domain and range of this function.

②

c. Determine the equation of this function if it was produced from $y = \sqrt{x}$ using a horizontal stretch and not a vertical stretch.

2. The graph of a sinusoidal function passes through $(0, 1)$, has a maximum point at $\left(\frac{\pi}{2}, 3\right)$, and a subsequent maximum point at $\left(\frac{7\pi}{6}, 3\right)$.

②

a. Determine the amplitude, period, midline, and range of this function.
[Hint: Determine the period, and show the point $(0, 1)$ is $\frac{3}{4}$ of a period to the left of the point $\left(\frac{\pi}{2}, 3\right)$. Why does this guarantee $(0, 1)$ is on the midline?]

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

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

(3)   3.   The High Roller Ferris wheel was completed in 2014 in Las Vegas. It is the largest in the world, with a height of 550 ft and a 520 ft diameter. Riders enter a cabin at the bottom of the wheel and are taken on a rotation that lasts 30 min.
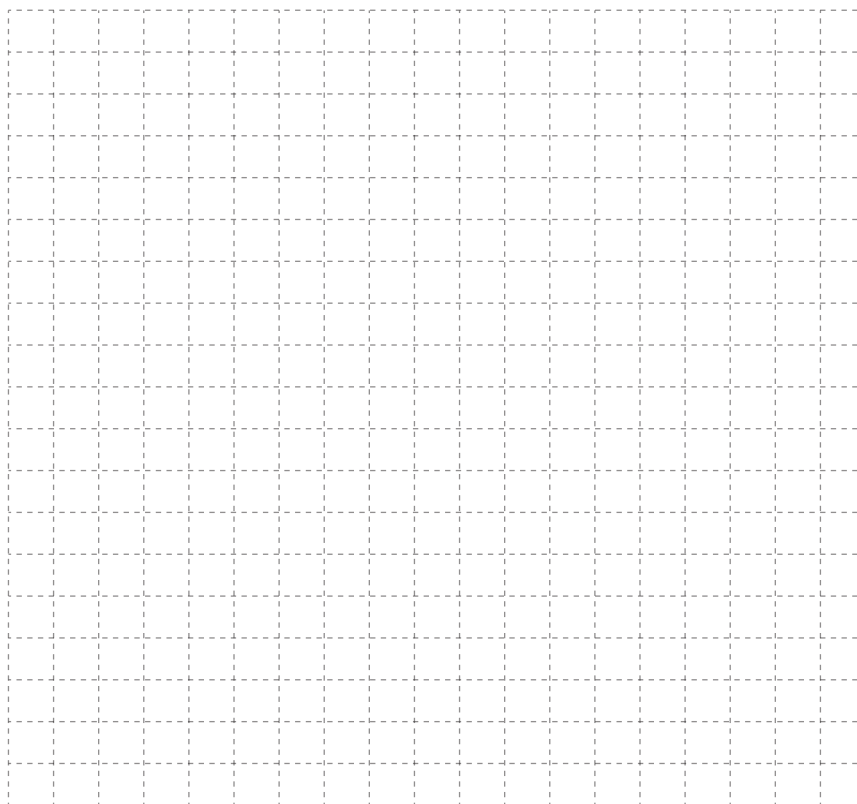
Write a sine function that models the height of a cabin for the duration of the ride.

© iStock

(1)   4.   a.   Explain how to graph $f(x) = \dfrac{4}{x-5} + 3$ using transformations.

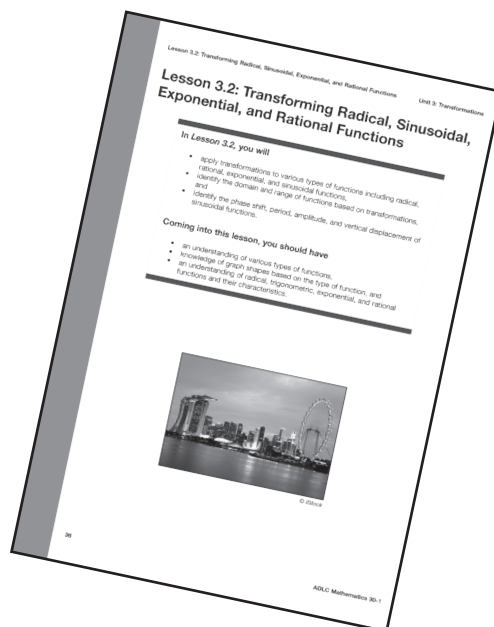(1)   b.   Sketch the graph of $y = f(x)$.

(2)   c. State the domain, range, asymptotes, and intercepts of the graph of $y = f(x)$.

(4)   5. Suppose, after entering the body, a substance is eliminated at a rate that can be modelled by the function $C = \left(\frac{1}{2}\right)^t$, where C is the concentration and t is time. Transform this function to match each of the following scenarios. [Hint: Only one transformation is required in each case.]

Description	Transformed Equation	Description of Transformation
The initial concentration of the substance is tripled.		
The substance is eliminated at one quarter of the original rate.		
A second substance delays all elimination of the first substance for 4 units of time.		
Instead of reducing the concentration of the substance toward 0, the body reduces the concentration of the substance toward 20 units.		

When this workbook is complete, submit it using a method described at the beginning of this *Workbook*. Next, complete *Test Your Understanding Quiz 3.1* online in Moodle. When complete, return to the Module and begin *Lesson 3.2*.

ADLC | Alberta Distance Learning Centre