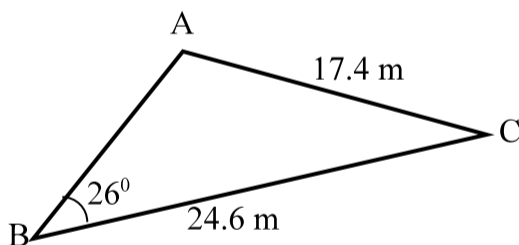


Menihek High School
Mathematics 2204
Mid Term Review - January 2009

Part A -Multiple Choice

1. What is the area of a triangle if two sides measure 15.2 and 8.63 respectively and the measure of the contained angle is 31.0° ?
A) 33.8 B) 56.2 C) 65.6 D) 67.6
2. What is the value of $\cos^{-1}\left(\frac{4}{7}\right)$?
A) 0.99 B) 1.0 C) 4.0 D) 55
B)
3. The height of a tree is 15.6 m and the angle of elevation of the sun is 38.0° . How long is the shadow cast by the tree?
A) 12.2 m B) 19.8 m C) 20.0 m D) 25.3 m
4. The value of sine for a 55° angle is 0.8192. What other angle has the same value of sine?
A) 125° B) 145° C) 235° D) 305°
5. Two sides of a triangle have lengths of 2.75 and 3.26 respectively. The contained angle has a measure of 36.0° . What is the length of the third side?
A) 44.2 B) 29.7 C) 3.68 D) 1.92
6. Find the value of $\angle A$ in the triangle shown below.



- A) 18° B) 38° C) 142° D) 162°
7. Which of the following is an identity matrix?
A) $\begin{pmatrix} 0 & 1 \\ 0 & 0 \end{pmatrix}$ B) $\begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$ C) $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ D) $\begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix}$
8. Which of the following ordered pairs is the solution for the system of equations:
$$\begin{cases} 3x - 2y = 13 \\ 2x + 4y = -2 \end{cases}$$

A) (-2, 3) B) (3, -2) C) (-3, 2) D) (2, -3)

9. What is the c-intercept of the plane described by the equation: $f = 12 + 0.3u + 0.6c$?

A) -20 B) 20 C) -40 D) 40

10. When two planes intersect, how can we best describe their intersection?

A) a point B) a plane C) a line D) two planes can't intersect

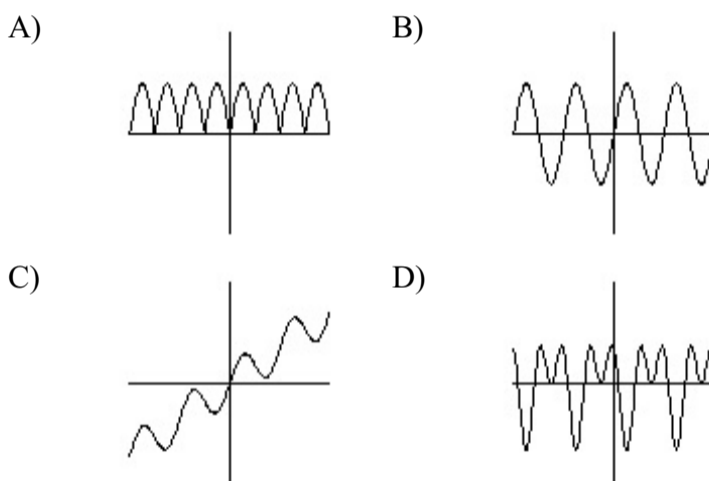
11. Which of the following matrices has no inverse?

A) $\begin{pmatrix} 6 & 3 \\ 8 & 4 \end{pmatrix}$ B) $\begin{pmatrix} 5 & 4 \\ 5 & 6 \end{pmatrix}$ C) $\begin{pmatrix} 3 & -5 \\ 4 & 6 \end{pmatrix}$ D) $\begin{pmatrix} -2 & 3 \\ -4 & -6 \end{pmatrix}$

12. What is the inverse of $\begin{pmatrix} -4 & 6 \\ 3 & -3 \end{pmatrix}$ in fraction form?

A) $\begin{pmatrix} \frac{1}{2} & 1 \\ \frac{1}{2} & \frac{2}{3} \end{pmatrix}$ B) $\begin{pmatrix} 0.5 & 1 \\ 0.5 & 0.\bar{6} \end{pmatrix}$ C) $\begin{pmatrix} -\frac{1}{2} & 1 \\ \frac{1}{2} & -\frac{2}{3} \end{pmatrix}$ D) $\begin{pmatrix} -\frac{1}{2} & -1 \\ -\frac{1}{2} & -\frac{2}{3} \end{pmatrix}$

13. Which of the following graphs shows a sinusoidal function?



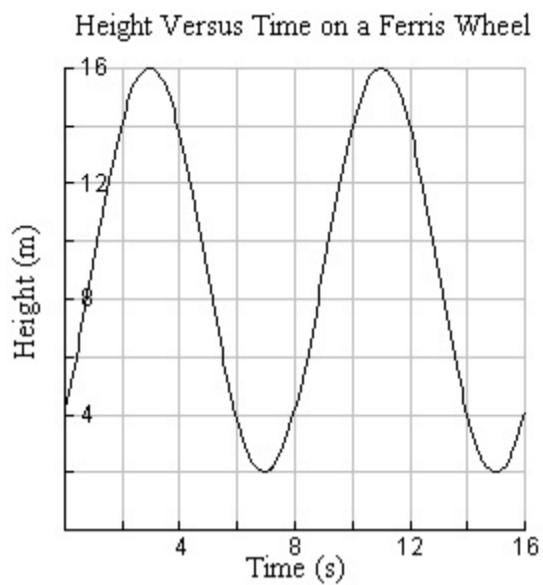
14. Which of the following best describes the graph of $x + 3y - 5z = 30$?

A) a point B) a line C) a plane D) it can't be graphed

15. What is the least number of equations needed to solve a system of equations containing five variables?

A) 2 B) 3 C) 4 D) 5

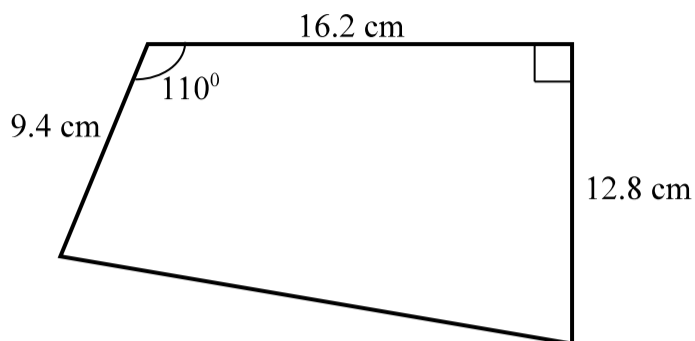
The graph below shows Bob's height on a Ferris wheel over a period of time. Use this graph to answer questions 18 - 20.



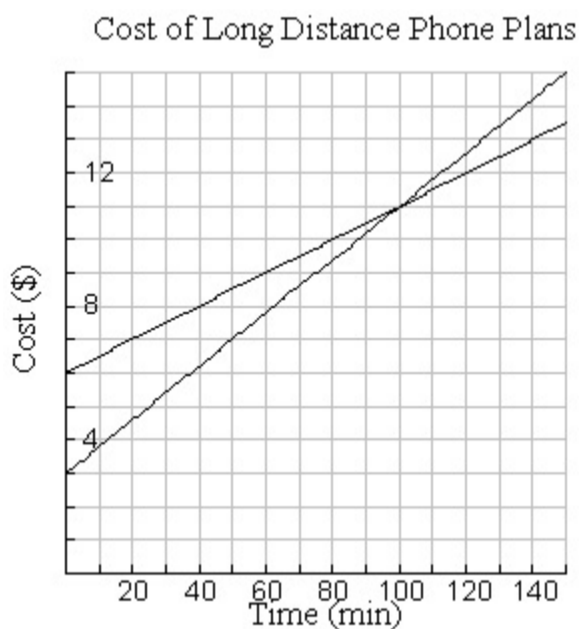
16. At what height does Bob board the Ferris wheel?
- A) 2 m B) 4 m C) 9 m D) 16 m
17. What is the radius of the Ferris wheel?
- A) 7 m B) 8 m C) 14 m D) 16 m
18. How long does it take the Ferris wheel to make one complete revolution?
- A) 3 s B) 4 s C) 7 s D) 8 s

Part B -Constructed Response

1. Find the area of the figure below.



2. A playground shaped like an obtuse triangle is to be enclosed by a fence. One angle measures 52° , the opposite side measures 23 m, and the longest side measures 28 m. Find the length of fencing required to surround the playground.
3. The graph shown below represents two phone plans.



- (a) Write an equation for each phone plan.
- (b) After how many minutes will each plan cost the same.
4. Solve the following system of equations using any method except matrices.

$$\begin{cases} 3x - 5y = 1 \\ 2x + 3y = -12 \end{cases}$$

5. Find the inverse of the matrix below. Be sure to show your workings.

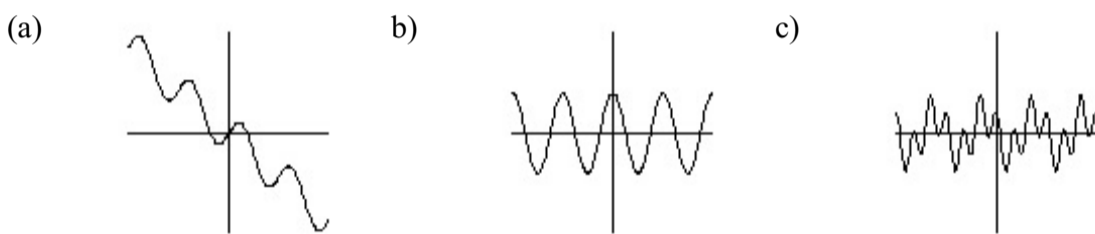
$$\begin{pmatrix} -3 & 2 \\ 4 & -4 \end{pmatrix}$$

6. A phone company charges different rates for Canadian calls, US calls, and overseas calls. Use the data provided in the table below to find the three rates. Show ALL your workings. You may use the graphing calculator for this question.

Time within Canada (min)	Time to the US (min)	Time overseas (min)	Charges (\$)
35	25	28	10.70
29	38	15	9.30
48	32	42	15.12

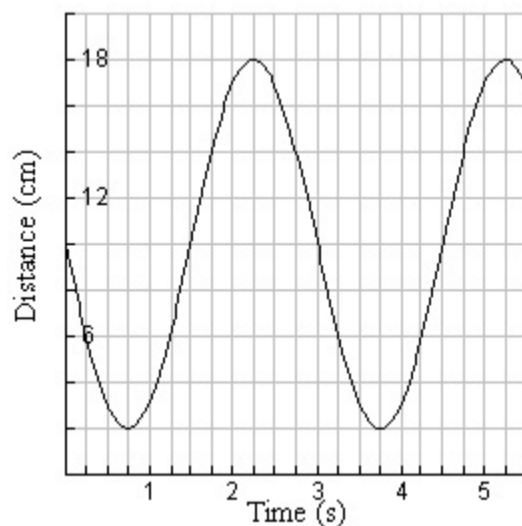
7. An archer wants to shoot an arrow at a target 50 m away, but he has to fire over the top of a wall 12 m high which is located 20 m from him. If he shoots the arrow from a height of 1.6 m and the center of the target is 2.5 m above the ground, write an equation to represent the path traveled by the arrow. Be sure to draw a diagram.

8. Determine whether each of the following functions is sinusoidal, periodic, or neither.



9. The graph below shows the distance between a ping pong paddle and a motion detector over time.

Distance Versus Time for Ping Pong Paddle



- (a) How far is the ping pong paddle from the motion detector at the start?
- (b) What is the period and what does it represent?
- (c) What is the amplitude and what does it represent?