

Applied Math 40S

Sinusoidal Review 1

Name _____

NOTE: Unless mentioned otherwise, **round all values to two decimal places.**

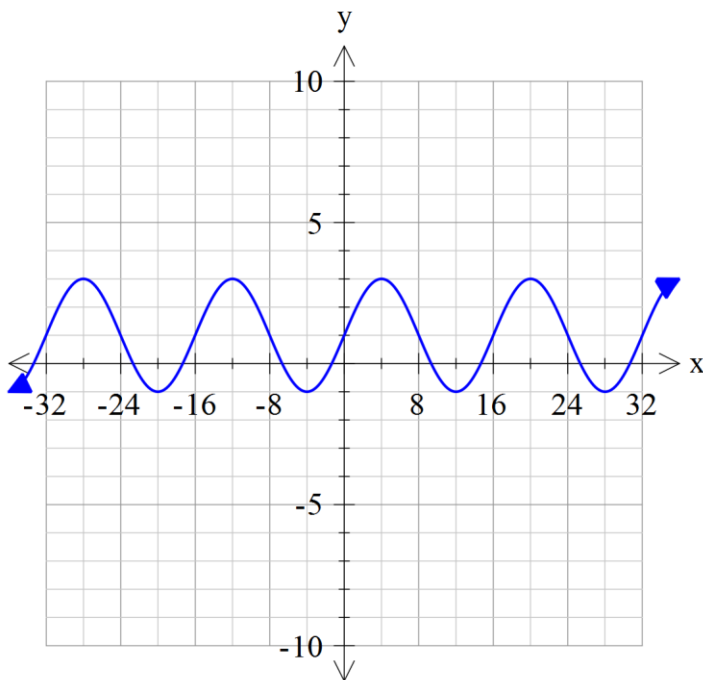
1. Fill in the chart with the information required for the two sinusoid functions below:

A. $y = 2 \sin 3(x - 4) + 5$

B. $y = 3 \sin 0.5(x + 2) - 1$

| Question | Maximum | Minimum | Midline | Period | Amplitude | Range |
|----------|---------|---------|---------|--------|-----------|-------|
| A | | | | | | |
| B | | | | | | |

2. Find A, B, D and the sinusoidal equation for the **sine** function below:



A _____ B _____ D _____

y = _____

NOTE: For the remaining questions be sure your calculator is set to RADIAN mode. Use MODE, line 3 to change.

3. a. Find the sinusoidal equation, **to two decimal places**, for the data given below :

| | | | | | | | | |
|---|----|----|----|----|----|----|----|----|
| X | 2 | 5 | 9 | 11 | 15 | 21 | 23 | 28 |
| y | -3 | -7 | -2 | 3 | 9 | 10 | 6 | -1 |

Equation: _____

- b. Find “y” when $x = 12$

- c. Find **two different** values of “x” when $y = 5$.

4. A Ferris wheel has a period of 40 seconds. It begins at its minimum height of 5 m and the maximum height is 25 m. Complete the table below for one cycle of the Ferris wheel and find the equation of the sinusoid to two decimal places.

| Time (x) | Height (y) |
|----------|------------|
| | |
| | |
| | |
| | |
| | |

Equation: _____

5. Give the equation of the **cosine** curve that has a maximum at 3, a minimum at -7, and a period of 1.57.
6. A **sine** function has a maximum at (-3, 7) and its next minimum is at (1, -1). Fill in the chart and find the equation of this sinusoid.

| Position | x | y |
|----------|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

a) Equation: _____

b) Find the value of curve when $x = 3.6$ _____

c) List two different positive x-values when $y = 5$. _____

Solutions

1.

| Question | Maximum | Minimum | Midline | Period | Amplitude | Range |
|----------|---------|---------|---------|--------|-----------|--------------------|
| A | 7 | 3 | 5 | 2.09 | 2 | $3 \leq y \leq 7$ |
| B | 2 | -4 | -1 | 12.56 | 3 | $-4 \leq y \leq 2$ |

2. A 2 B 0.39 D 1

$$y = \underline{\hspace{10em}} 2\sin 0.39(x) + 1$$

3. A) $y = 8.40 \sin(0.23x - 2.66) + 3.01$
 B) 3.93
 C) Many but three close to y-axis are: -3.12, 12.56, 24.10

4.

| Position | x | y |
|----------|----|----|
| Min | 0 | 5 |
| Med | 10 | 15 |
| Max | 20 | 25 |
| Med | 30 | 15 |
| Min | 40 | 5 |

$$y = 10\sin(0.16x - 1.57) + 15$$

5. $y = 5 \cos 4x - 2$

6.

| Position | x | y |
|----------|----|----|
| Max | -3 | 7 |
| Med | -1 | 3 |
| Min | 1 | -1 |
| Med | 3 | 3 |
| Max | 5 | 7 |

- A) $y = 4\sin(0.79x - 2.36) + 3$
 B) 4.82
 C) 3.67 and 6.33