Sketching the Graphs of *f*(*x*)=sin *x* and *f*(*x*)=cos *x*.

Graphing *y* = sin *x*

**1.** Complete the table of values for *y* = sin *x*, where the angle *x* is measured in radians, for the domain . Include the exact value and the approximate value rounded to one decimal place.

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| Value of *x*  (radians) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Value of *x*  (degrees) |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Exact Values of sin *x* |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Decimal value of sin *x* |  |  |  |  |  |  |  |  |  |  |  |  |  |

1. Use the decimal values of sin *x* and plot the ordered pairs (*x,* sin *x*) on a grid. Use radians for the *x-*axis with intervals of rads. Join the points with a smooth curve.
2. a) What is the maximum value of *y* = sin *x*?
3. For what value of *x* does the maximum value of *y* occur?
4. a) What is the minimum value of *y* = sin *x*?

b) For what value of *x* does the minimum value of *y* occur?

1. What is the amplitude of *y* = sin *x*?
2. The highlighted angles are the values used for a 5 point sketch. Draw another set of axes for the domain , with intervals of  and use the values of the 5 points to sketch the graph of *y* = sin *x* over this new domain.
3. Explain the statement ‘the graph of *y* = sin *x* is periodic’.
4. What is the period of the graph of *y* = sin *x*?
5. How can you verify that *y* = sin *x* is a function?
6. For the function *y* = sin *x*, what is

a) the domain? b) the range?

1. Check your graph using a graphing calculator. Put the calculator in radian mode by pressing MODE Radian ENTER. Adjust your window to correspond to the correct domain in radians.

Graphing *y* = cos *x*

**12.** Complete the table of values for *y* = cos *x*, where the angle *x* is measured in radians, for the domain . Include the exact value and the approximate value rounded to one decimal place.

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| Value of *x*  (radians) | 0 |  |  |  |  |
| Value of *x*  (degrees) |  |  |  |  |  |
| Exact Values of cos *x* |  |  |  |  |  |

1. Use the exact values of cos *x* and plot the ordered pairs (*x,* cos *x*) on a grid. Use radians for the *x-*axis with intervals of rads. Join the points with a smooth curve.
2. a) What is the maximum value of *y* = cos *x*?
3. For what value of *x* does the maximum value of *y* occur?
4. a) What is the minimum value of *y* = cos *x*?

b) For what value of *x* does the minimum value of *y* occur?

1. What is the amplitude of *y* = cos *x*?
2. Draw another set of axes for the domain , with intervals of  and consider the values of the 5 points to sketch the graph of *y* = cos *x* over this new domain.
3. Explain the statement ‘the graph of *y* = cos *x* is periodic’.
4. What is the period of the graph of *y* = cos *x*?
5. How can you verify that *y* = cos *x* is a function?
6. For the function *y* = cos *x*, what is

a) the domain? b) the range?

1. Check your graph using a graphing calculator. Put the calculator in radian mode by pressing MODE Radian ENTER. Adjust your window to correspond to the correct domain in radians.
2. Compare the graphs of *y* = sin *x*  and *y* = cos *x*. How are they alike? How are they different?

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