Functions

While working in a group make sure you:

• Expect to make mistakes but be sure to reflect/learn from them!
• Are civil and are aware of your impact on others.
• Assume and engage with the strongest argument while assuming best intent.

1. Let $C$ be the piecewise defined function:

\[
C(x) = \begin{cases} 
0 & \text{if } 0 \leq x < 57 \\
.1x - 5 & \text{if } 57 \leq x \leq 90 \\
4.0 & \text{if } 90 < x
\end{cases}
\]

(a) Find $C(70)$.

(b) Find the output of the function $C$ when $x = 40$.

(c) Given that $C$ is a function, what is the domain of $C$?

2. Let $f$ be a function defined algebraically by: $f(x) = \frac{1}{1 - x^2}$

(a) Find $f(2.2)$.

(b) Find the output of the function $f$ when $x = -3$.

(c) Find $f(\Delta)$ and $f(a + h)$.

(d) Given that $f$ is a function, use the domain convention to find the domain of $f$?
Verify your answers on the previous page by looking at Examples 5 from §1.4 and §1.3.

The cartesian plane uniquely identifies all the points on a plane with two coordinates called an ordered pair.

For example, the point (-2.5,4) corresponds to the point 2.5 units to the left of the y-axis, and 4 units above the x-axis.

Write down the ordered pair for the following points:

(a) A
(b) B
(c) C

3. Identify the ordered pair (2, -4) on the axes above.

4. The cartesian plane divides the plane into four quadrants. The first quadrant is the upper right, where both the x and y coordinates are positive. On the cartesian plane above, identify the 2nd and 4th quadrants.

Def: The graph of a function $F$ is the set of ordered pairs $(x, y)$ such that $y = F(x)$.

5. Consider the first function we saw in class defined in the following table:

<table>
<thead>
<tr>
<th>$x$</th>
<th>$f(x)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>-4</td>
<td>16</td>
</tr>
<tr>
<td>-2</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Most of the graph of $f$ is graphed on the right. Look at the definition of a graph and finish graphing the function $f$.

Verify your answers for the above questions by consulting the top of page 38.