
Complete the following problems. Show all work to receive full credit.

1. Find the domain of the function $F(t) = \frac{1}{1 + \sqrt{t}}$

There are two things to check here - first we need the square root to only be taken of a number ≥ 0 . Therefore we need $t \geq 0$.

We also need to check that the denominator is never 0, so we need that

$$1 + \sqrt{t} \neq 0$$

$$\sqrt{t} \neq -1$$

This can never happen, so we don't have to worry about this condition. Therefore the domain is

$$t \geq 0$$

2. Does $|y| = x$ express y as a function of x ? Explain your answer.

We are asking if, when x is the input and y is the output, this gives us a function. This is not a function. For instance, if $x = 3$ then there are two y 's which go with that input, namely $y = \pm 3$.

3. Find the average rate of change of $g(t) = 2 + \cos t$ from $t = -\pi$ to $t = \pi$.

We are being asked to find the slope of the secant line between the points on the graph of $g(t)$ with coordinates $(-\pi, g(-\pi))$ and $(\pi, g(\pi))$. First let us find the coordinates of these points:

$$(-\pi, g(-\pi)) = (-\pi, 2 + \cos(-\pi)) = (\pi, 2 + (-1)) = (-\pi, 1)$$

$$(\pi, g(\pi)) = (\pi, 2 + \cos \pi) = (\pi, 2 + (-1)) = (\pi, 1)$$

Therefore the slope is

$$m = \frac{1 - 1}{\pi - (-\pi)} = \frac{0}{2\pi} = 0$$