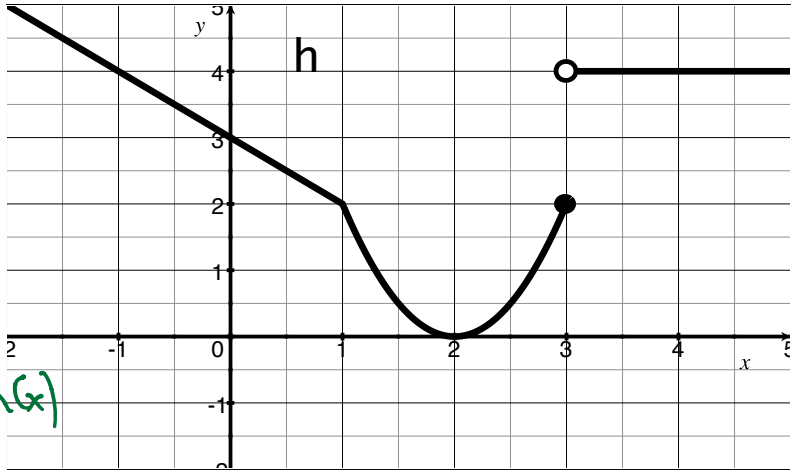
Key

TMATH 124: Quiz 1

Reasonable supporting work must be shown to earn credit.

1. [4] Use the graph of h below to find the limits (either numerically, graphically, or algebraically), if they exist:



graph reading +.5 +.5 from above 3 got +1 if rule 2 +1 partial

$\lim_{x\to 3^+} h(x)$ (4)

as I approach 3 from above so 3.1 or 3.01...

Table

x	y
3.1	4
3.01	4
3.001	4

graph reading +.5 +.5 left and right +1 got it +1 if give 1-sided +1 partial

$\lim_{x\to 3} h(x)$

$\lim_{x\to 3^-} h(x) = 2 \neq \lim_{x\to 3^+} h(x)$

DNE

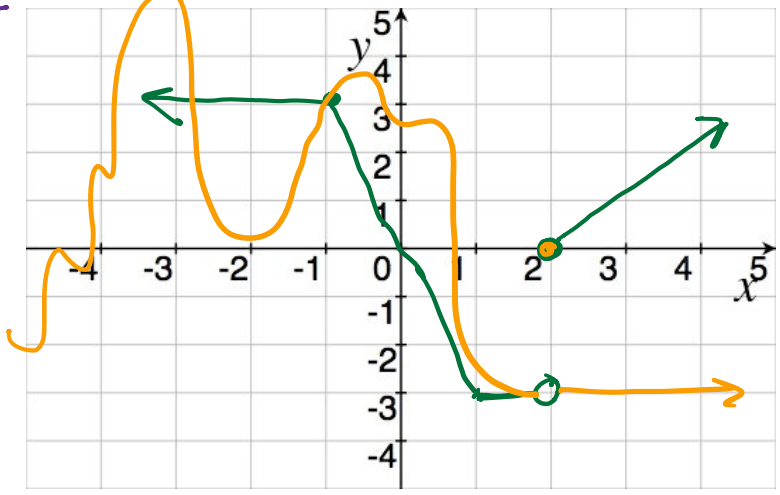
2. [4] Sketch the graph of a function α that satisfies *all* of the following.

+1 (a) $\lim_{x\to -1} \alpha(x) = 3$

+1 (b) $\lim_{x\to 2^-} \alpha(x) = -3$

+1 (c) $\alpha(2) = 0$

+1



So many answers!

another possible answer in orange

3. [2] Find the limit (either numerically, graphically, or algebraically), if it exists: $\lim_{t\to 0} \frac{2\sin(t)}{t}$

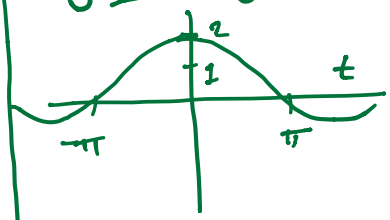
start +.5 notation +.5 def of limit +.5 got it +.5

numerically

t	$\frac{2\sin(t)}{t}$
-.1	1.99
-.01	1.999967
-.001	1.99999997
0	DNE
.001	1.99999997
.01	1.999967
.1	1.99

2

OR graphically



as $t\to 0$, $y\to 2$

OR algebraically

Recall Fact from Video's: $\lim_{\theta\to 0} \frac{\sin\theta}{\theta} = 1$

$\lim_{t\to 0} \frac{2\sin(t)}{t} = \lim_{t\to 0} 2\cdot\frac{\sin(t)}{t}$

$= 2\lim_{t\to 0} \frac{\sin(t)}{t}$

$= 2\cdot 1 = 2$