

TMATH 124: Quiz 1

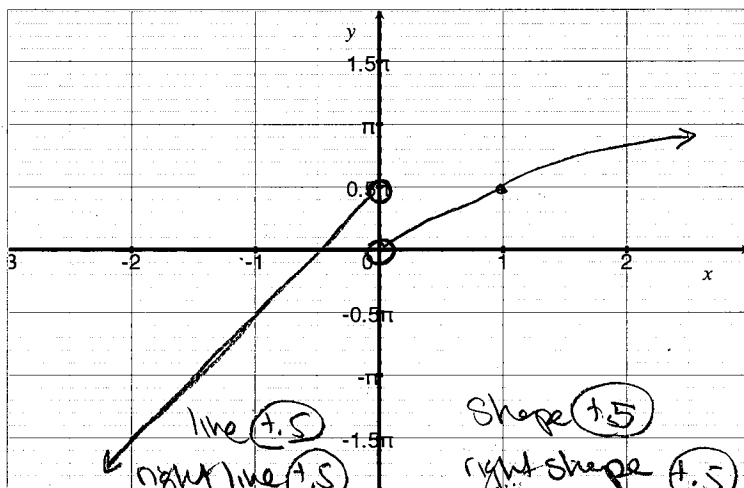
Key

Show *all* your work (numerically, algebraically, or geometrically) for each and simplify. No credit is given without supporting work. No calculators or notes are allowed.

1. Let $f(x) = \begin{cases} \pi x + \frac{\pi}{2} & \text{if } x < 0 \\ 2 \arctan(x) & \text{if } 0 < x \end{cases}$ line w/ intercept of $\frac{\pi}{2}$ & slope π
vertical stretch by 2

(a) [3] Carefully graph f on the axis provided

domain (+1)



(b) [1] (§2.2 #12) Determine the values of c for which $\lim_{x \rightarrow c} f(x)$ exists.

If you are having trouble with (a) explain how you would find the answer.

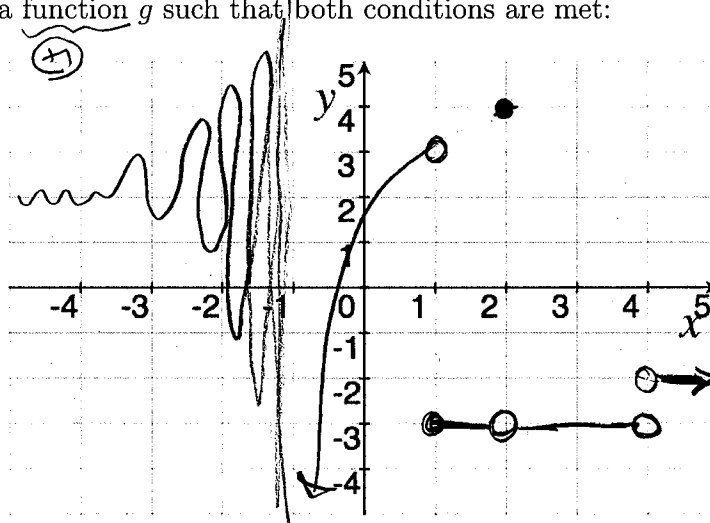
all c except when $c=0$
 or
 $(-\infty, 0)$ AND $(0, \infty)$
 c to

note 0 (+.5)
 got it (+.5)

2. [3] (Limits Wks #3) Draw a function g such that both conditions are met:

(a) $\lim_{x \rightarrow 2} g(x) = -3$

(b) $g(2) = 4$



note there are MANY correct answers

3. [3] (WebHW2 #1 & §2.3 #2f) For the function h whose graph is given, estimate the value of each quantity, if it exists.

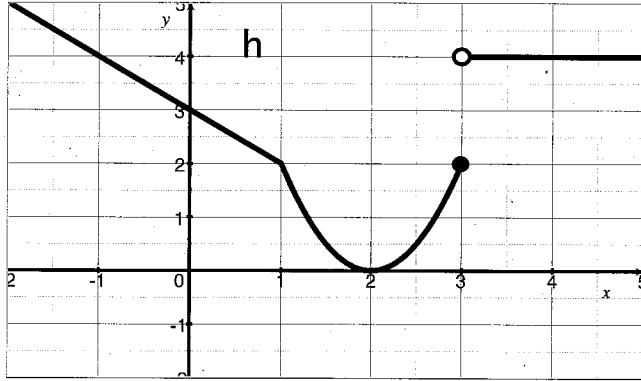
$$\lim_{x \rightarrow -1} h(x)$$

(x) 2

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

4
(x)

Partial:
+1.5, +2



$$\lim_{x \rightarrow -1} \sqrt{5h(x) + 5}$$

$$\stackrel{L\#1}{=} \sqrt{\lim_{x \rightarrow -1} (5h(x) + 5)}$$

$$\stackrel{L\#1}{=} \sqrt{\lim_{x \rightarrow -1} 5h(x) + \lim_{x \rightarrow -1} 5}$$

$$\stackrel{L\#3}{\stackrel{47}{=}} \sqrt{5 \lim_{x \rightarrow -1} h(x) + 5}$$

$$= \sqrt{5(4) + 5}$$

$$= \sqrt{25}$$

$$= 5$$

b/c h is con't @ $x = -1$

$$= \sqrt{5h(-1) + 5}$$

$$= \sqrt{5(4) + 5}$$

$$= 5$$

Limit laws (1.5)

eval $\lim_{x \rightarrow -1} h(x)$ (1.5)