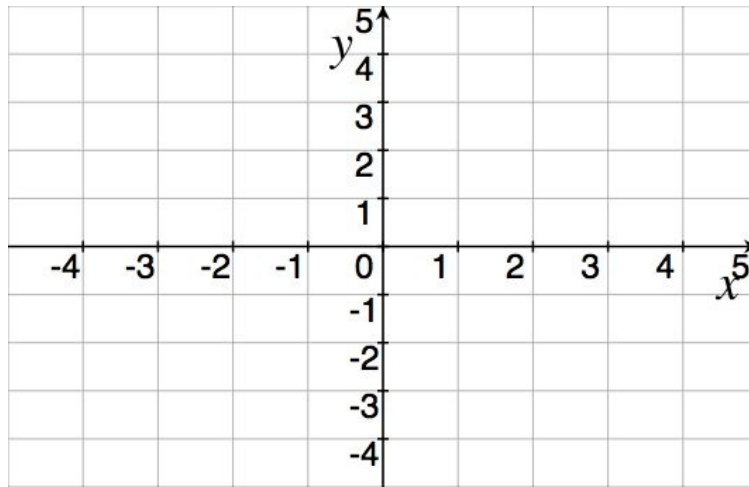


TMATH 124pm: Quiz 1

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

1. (§2.2 #12) Let $f(x) = \begin{cases} -x - 3 & \text{if } x < -2 \\ -2 & \text{if } -2 < x < 1 \\ \log_3(x) & \text{if } 1 < x \end{cases}$

(a) [2] *Carefully* graph f on the axis provided



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

2. [2] (limit laws wks #5) Let $g(x) = x^2 - 2x$. Find the difference quotient of g at 1, that is find:

$$\lim_{x \rightarrow 0} \frac{g(3+h) - g(h)}{h}$$

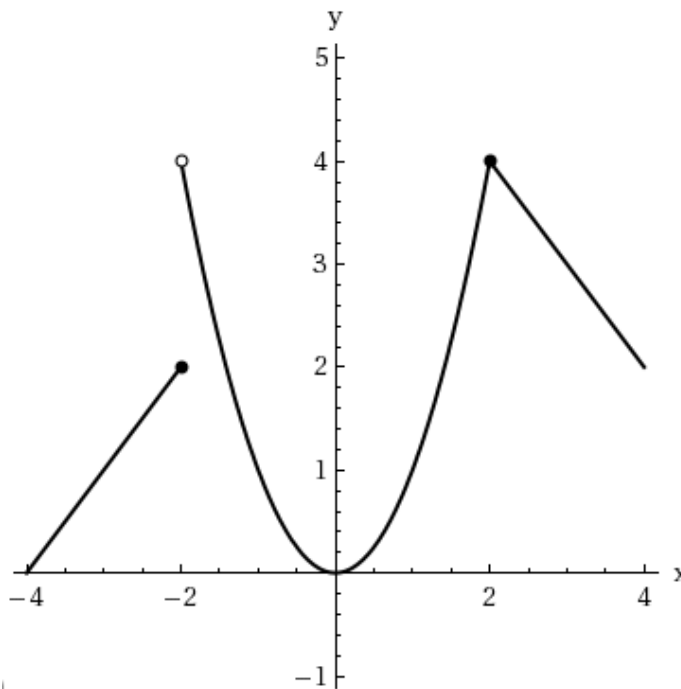
3. [5] (WebHW2 #6) For the function f whose graph is given, estimate the value of each quantity, if it exists.

(WebHW2 #2) $\lim_{x \rightarrow -3} f(x)$

(WebHW2 #2) $\lim_{x \rightarrow -2} f(x)$

(WebHW1 #9) $f(-2)$

(WebHW2 #2) $\lim_{x \rightarrow 4^-} f(x)$



(WebHW3 #1) $\lim_{x \rightarrow -2^+} \left[\frac{1}{2}f(x) - 7 \right]$