

Limits

Note: a personal copy of this worksheet may be used during the quiz on Tuesday.

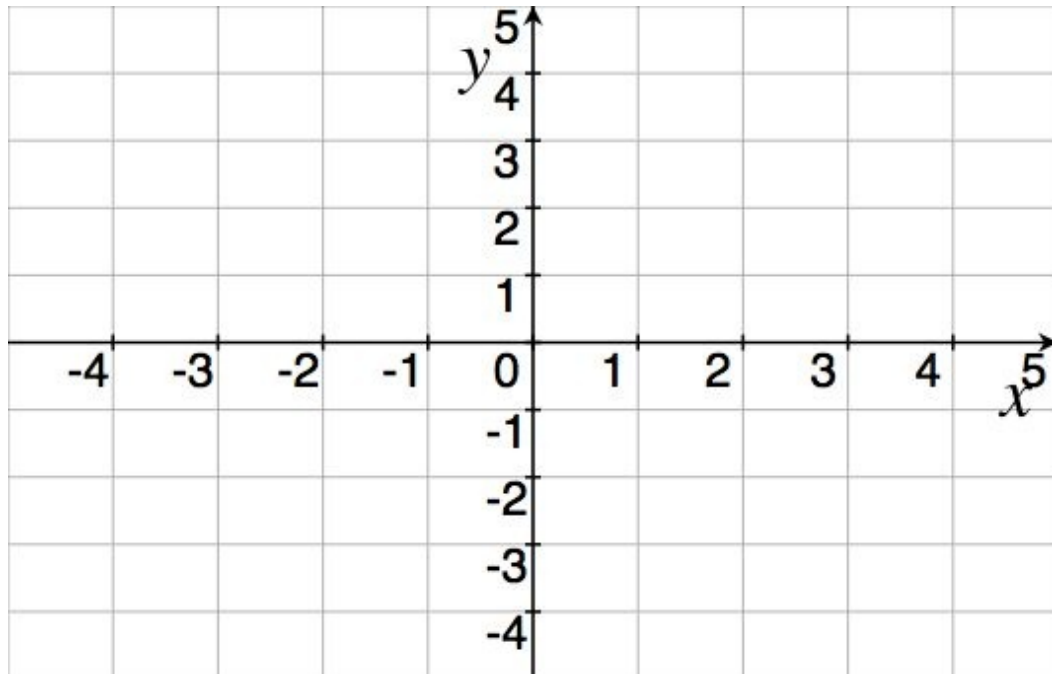
1. Consider $f(x) = \frac{2x^2 + 4x}{x + 2}$.

(a) Fill in the following table:

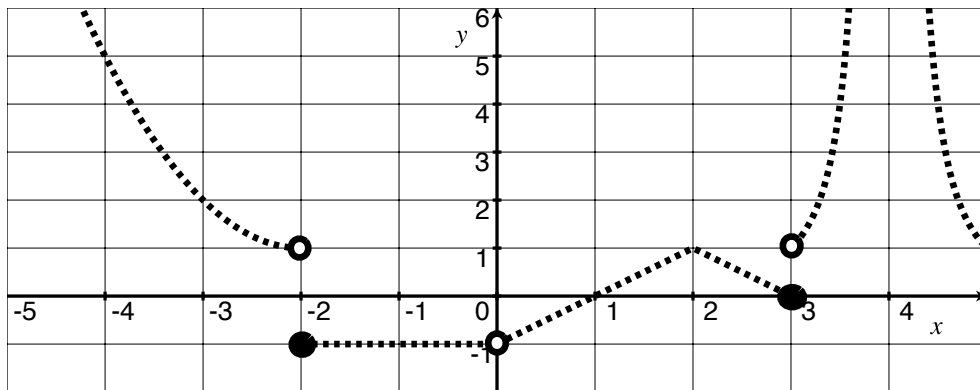
x	-1	-1.9	-1.99	-2	-2.01	-2.1	-3
f(x)							

(b) Use the data above to find $\lim_{x \rightarrow -2} f(x)$.

(c) Draw the graph of f on the axis below and verify your answer.



2. Let g be the piece-wise defined function below. This means the graph of g is the *entire* dotted graph shown below.



- (a) Find the following *if* it exists:

$$\lim_{x \rightarrow 1} g(x)$$

$$\lim_{x \rightarrow 0} g(x)$$

$$\lim_{x \rightarrow 3} g(x)$$

$$\lim_{x \rightarrow 2} g(x)$$

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

$$\lim_{x \rightarrow 4} g(x)$$

3. Sketch a graph of a function α that satisfies *all* of the following:

$$\alpha(-1) = 2, \quad \lim_{x \rightarrow -1} \alpha(x) = -3, \quad \lim_{x \rightarrow 2} \alpha(x) = \infty, \quad \text{and the } \lim_{x \rightarrow 4} \alpha(x) \text{ does not exist.}$$

