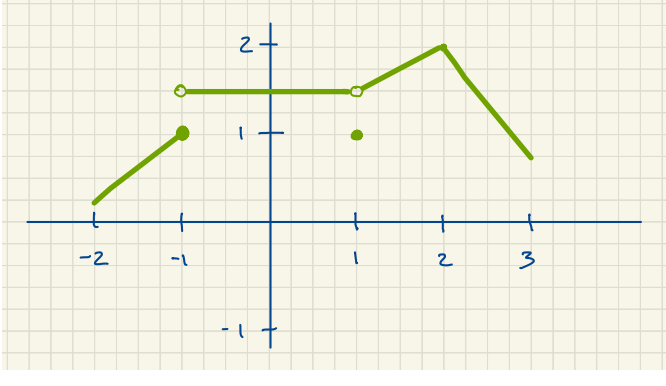
# Use the graph of $y = f(x)$ shown below to find the following

1. $\lim_{x \to 1} f(x)$
2. $f(1)$
3. $f(-1)$
4. $\lim_{x \to -1^-} f(x)$
5. $\lim_{x \to -1^+} f(x)$
6. $\lim_{x \to -1} f(x)$




Graph of $y = f(x)$

# Talk with the people around you for a minute

$$\lim_{x \to 2} \frac{x^2 + x - 6}{x - 2} =$$

(a) 0

(b) Does not exist

(c) $\infty$

(d) 5

(e) 4

# Talk with the people around you for a minute

Let $f(x) = x^2 + x$. Then $\lim_{h \to 0} \frac{f(2+h) - f(2)}{h} =$

(a) 1

(b) 5

(c) Does not exist

(d) 0

(e) -3

# Talk with the people around you for a minute

Let $f(x) = x^2 + x$. Then $\lim_{x \to 2} \frac{f(x) - 2}{x - 2} =$

(a) 1

(b) 5

(c) Does not exist

(d) 0

(e) -3

## Let $f(x) = x^2 + x + 1$

1. Evaluate $\lim_{h \to 0} \dfrac{f(1+h) - f(1)}{h}$

2. Let $m$ denote your answer to 1.
   Find the equation of the line through the point $(1, f(1))$ with slope $m$.

   Recall that the point-slope equation for the line through a point $(x_0, y_0)$ with slope $m$ is $y - y_0 = m(x - x_0)$.

3. Graph $y = f(x)$ and your line from part (b) on the same set of axes.
   How are the graphs related?