Complete the parts below to determine the apparent value of the following limit.

$$\lim_{x \to 0} \frac{(x+1)^3 - 1}{x} = 3$$

(a) Fill in the blanks. Do not round intermediate computations, and round your answers to 4 decimal places where applicable.

x	-1	-0.5	-0.1	-0.001	$\longrightarrow 0 \longleftarrow$	0.001	0.1	0.5	1
$\frac{(x+1)^3 - 1}{x}$	1	1.75	2.71	2.9970	$\longrightarrow ? \longleftarrow$	3.0030	3.31	4.75	7

$$\lim_{x \to 6} \frac{3\sqrt{3x-14}-6}{x-6}$$

(a) Fill in the blanks. Do not round intermediate computations, and round y

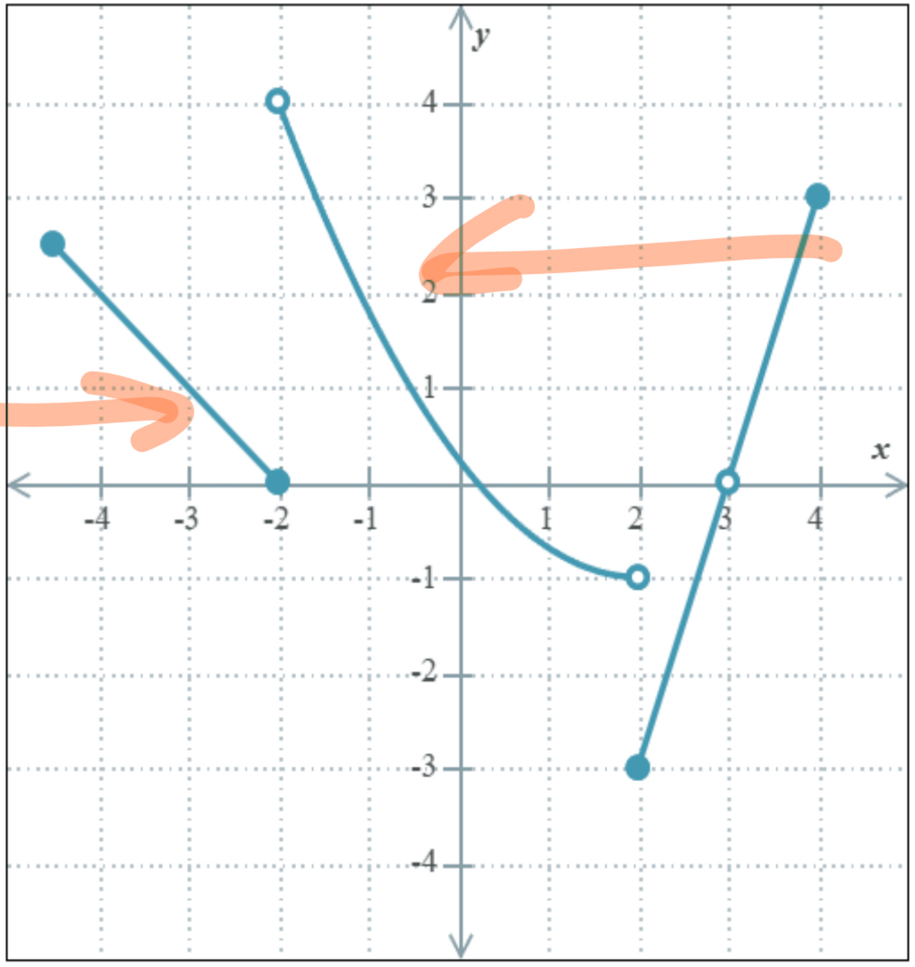
x	5.5	5.9	5.95	5.999	$\longrightarrow$ 6 $\longleftarrow$
$\frac{3\sqrt{3x-14}-6}{x-6}$	2.5132	2.2938	☐	☐	$\longrightarrow$? $\longleftarrow$

(b) Use the values from part (a) to fill in the apparent value of the following

$$\lim_{x \to 6} \frac{3\sqrt{3x-14}-6}{x-6} = \square\ 2.25$$

x	$\frac{3\sqrt{3x-14}-6}{x-6}$
5.5	2.513167
5.9	2.2938478
5.95	2.2714988
5.999	2.250422
6	undefined
6.001	2.2495783
6.05	2.2292927
6.1	2.2093241
6.5	2.0712473

The function h is graphed below.



coming from left

$$\lim_{x \to -2^-} h(x) = \boxed{}$$

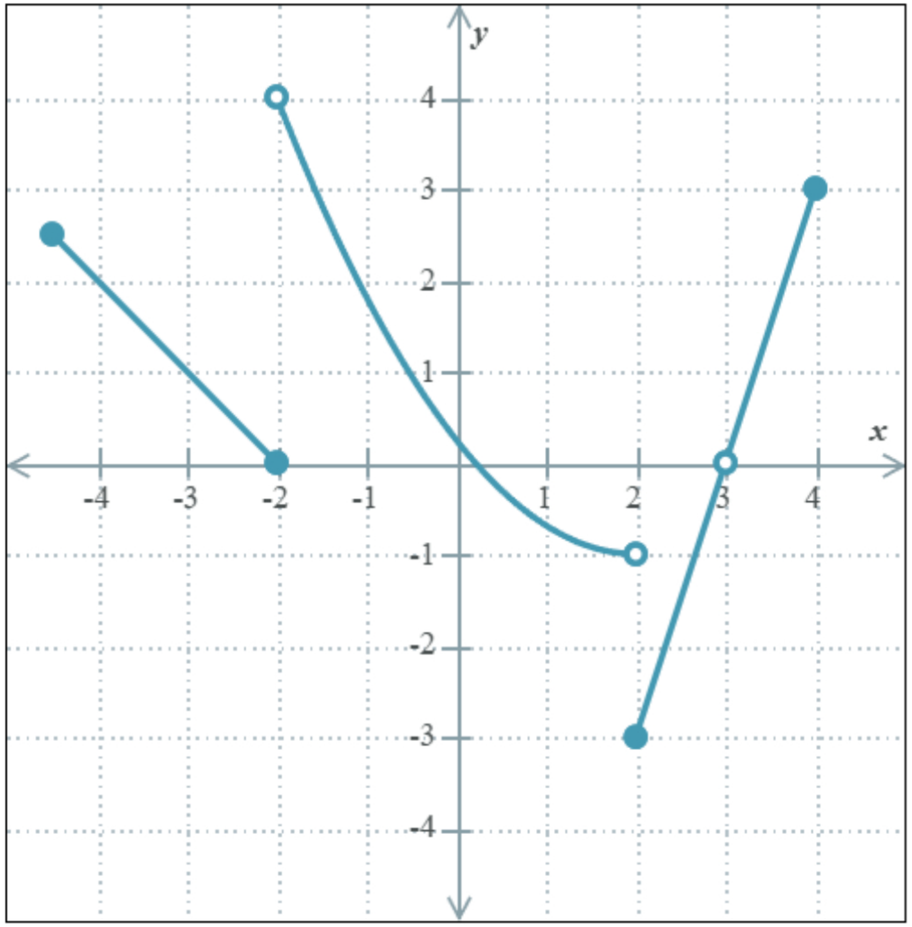
$$\lim_{x \to -2^+} h(x) = \boxed{4}$$

coming from right

$$\lim_{x \to -2} h(x) = \boxed{}$$

DNE

The function h is graphed below.

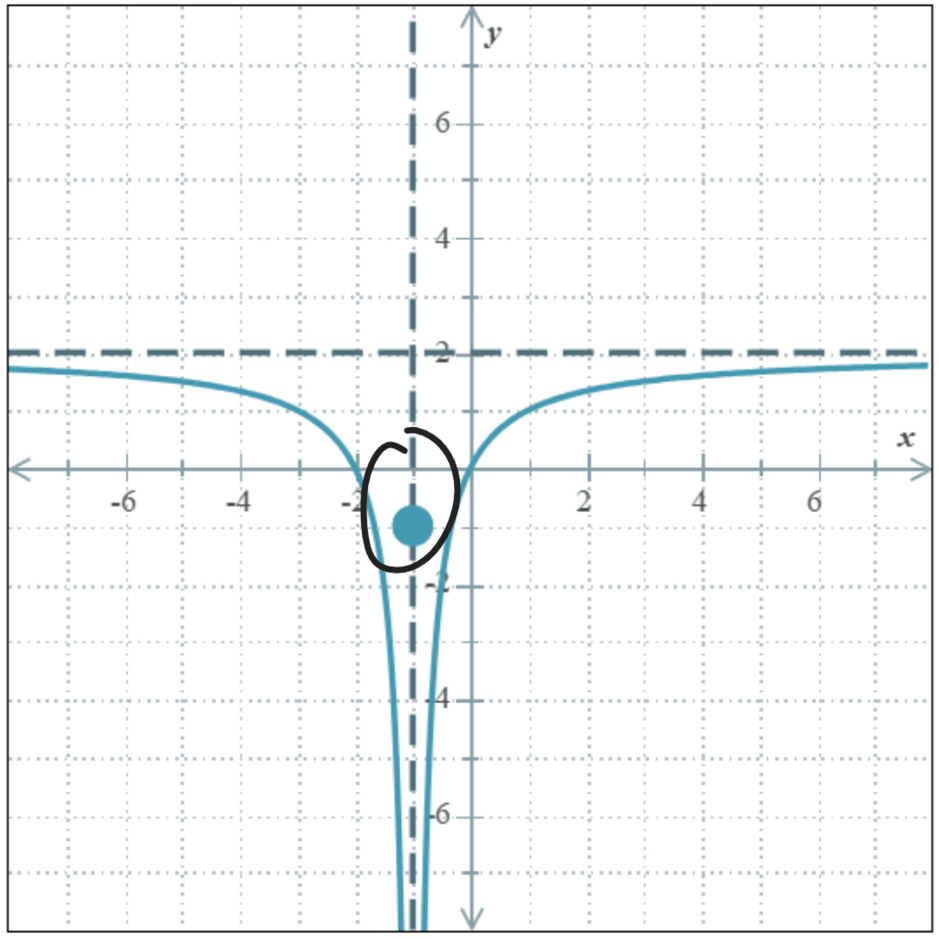


$\lim_{x \to 3^-} h(x) = \emptyset$

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

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

The graph of the function h is shown below, along with its asymptotes.



$$\lim_{x \to -1^-} h(x) = -\infty$$

$$\lim_{x \to -1^+} h(x) = -\infty$$

$$\lim_{x \to -1} h(x) = -\infty$$

$$h(-1) = -1$$

Find the following limits for $f(x) = \dfrac{-x}{x-3}$

If necessary, select the most informative answer from ∞, $-\infty$, and "Does Not Exist".

(a)

$\lim_{x \to 3^-} f(x) =$ ☐

$\dfrac{(-)}{(-)}$

$+\infty$

$\lim_{x \to 3^+} f(x) =$ ☐

$\dfrac{(-)}{(+)}$

$-\infty$

$\lim_{x \to 3} f(x) =$ ☐

DNE

Find the following limits fo $g(x) = \dfrac{-2x}{4-x^2}$.

If necessary, select the most informative answer from ∞, $-\infty$, and "Does Not Exist".

$\frac{(-)}{(+)} \to -$ $\quad\quad$ $\frac{(-)}{(-)} \to +$

(b)

$\lim_{x \to 2^-} g(x) =$ $-\infty$ $\quad\quad$ $\lim_{x \to 2^+} g(x) =$ $+\infty$ $\quad\quad$ $\lim_{x \to 2} g(x) =$ DNE

$$\frac{f(x+h) - f(h)}{h}$$

$$x_1 =$$

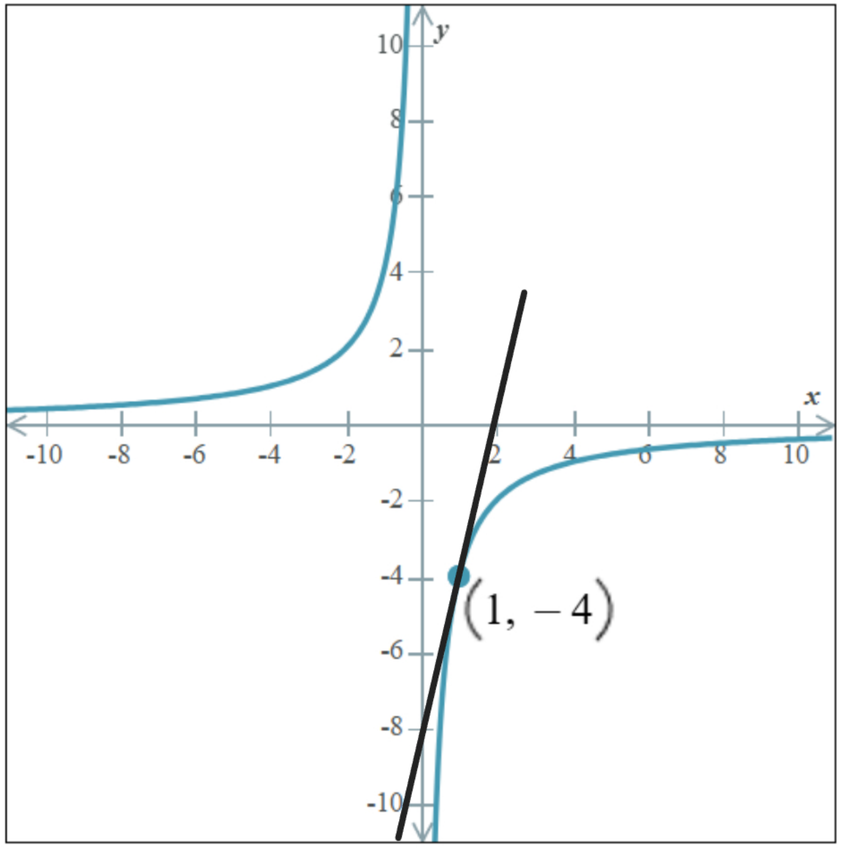
$$y_1 = -\frac{4}{x_1}$$

$$x_2 =$$

$$y_2 = -\frac{4}{x_2}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

The point $(1, -4)$ is on the graph of the function $f(x) = -\frac{4}{x}$ as shown.



Slope of the secant line passing through $(1, -4)$ and $(x, f(x))$

Value of x	0.8	0.9	0.99	0.999	$\longrightarrow 1 \longleftarrow$	1.001	1.01	1.1	1.2
Slope					$\longrightarrow ? \longleftarrow$				

5
4.44

Answer the parts below to estimate the slope of the tangent line at $(1, -4)$.