2.6: Limits at Infinity and Horizontal Asymptotes (Homework)

INSTRUCTOR
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Past Due **Due Date:** FRI, FEB 13, 2026 11:59 PM CST

Current Score: 20 / 20 POINTS | 100.0 %

Due date has passed. No changes can be made without an approved extension request.
You may not be granted an extension if you have already viewed the answer key.

VIEW ANSWER KEY

Scoring and Assignment Information

QUESTION	1	2	3	4	5	6	7	8	9	10
POINTS	6 / 6	1 / 1	2 / 2	2 / 2	1 / 1	1 / 1	1 / 1	2 / 2	2 / 2	2 / 2

Assignment Submission

For this assignment, you submit answers by question parts. The number of submissions remaining for each question part only changes if you submit or change the answer.

Assignment Scoring

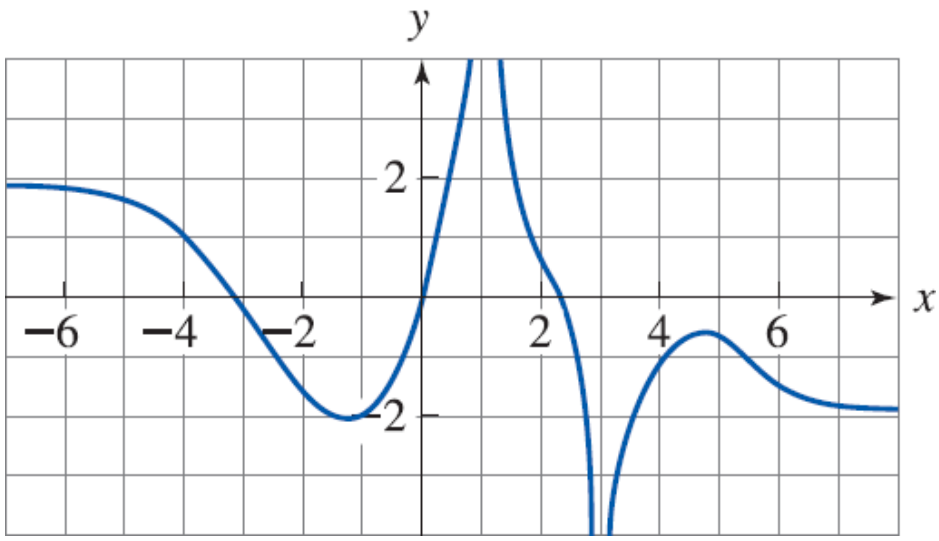
Your best submission for each question part is used for your score.

1. **[6 / 6 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER | PRACTICE ANOTHER

SCalcET9 2.6.003.

For the function *f* whose graph is given, state the following. (If the limit is infinite, enter '∞' or '-∞', as appropriate. If the limit does not otherwise exist, enter DNE.)



(a) $\lim_{x \to \infty} f(x)$

$$-2

✔ Amazing work!

(b) $\lim_{x \to -\infty} f(x)$

$$2

✔ Good job!

(c) $\lim_{x \to 1} f(x)$

$$∞

✔ That's it!

(d) $\lim_{x \to 3} f(x)$

$$−∞

Great work!

(e) the equations of the asymptotes (Enter your answers as comma-separated lists.)

x = $$1, 3

Outstanding!

y = $$2, −2

Great work!

Resources

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2. **[1 / 1 Points]**

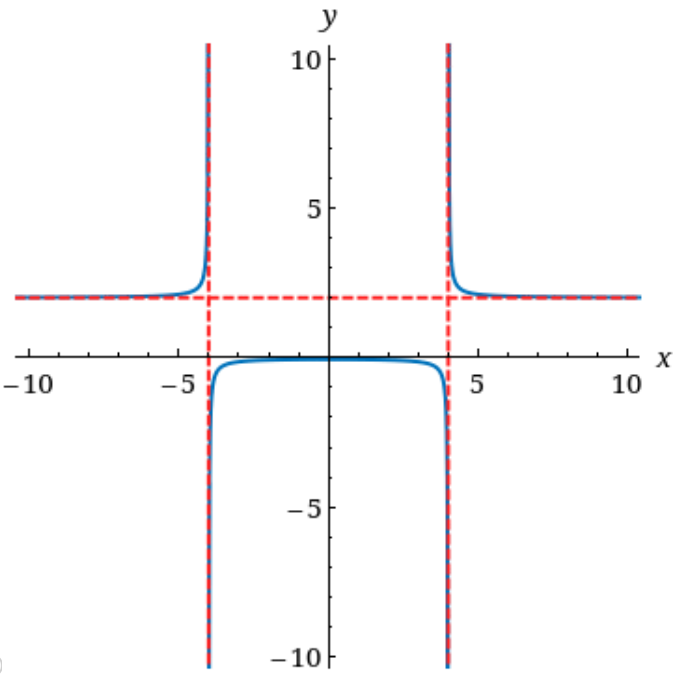
DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER

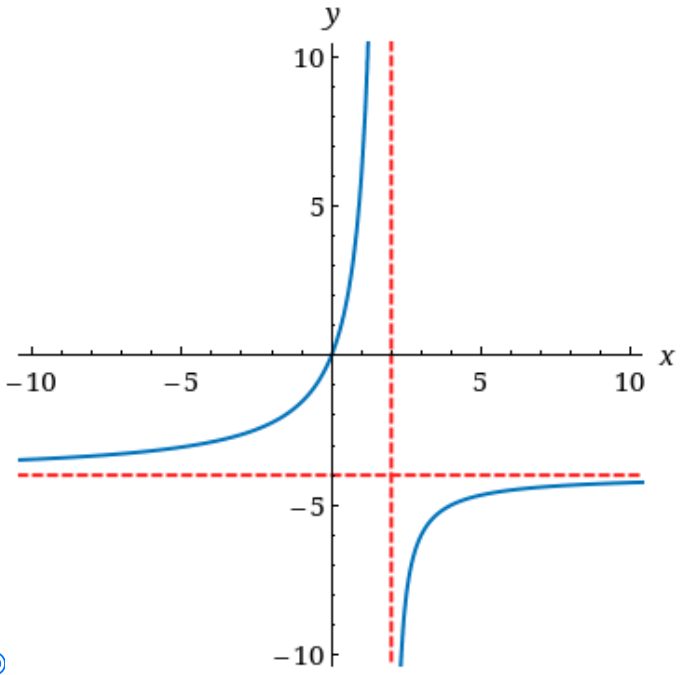
PRACTICE ANOTHER

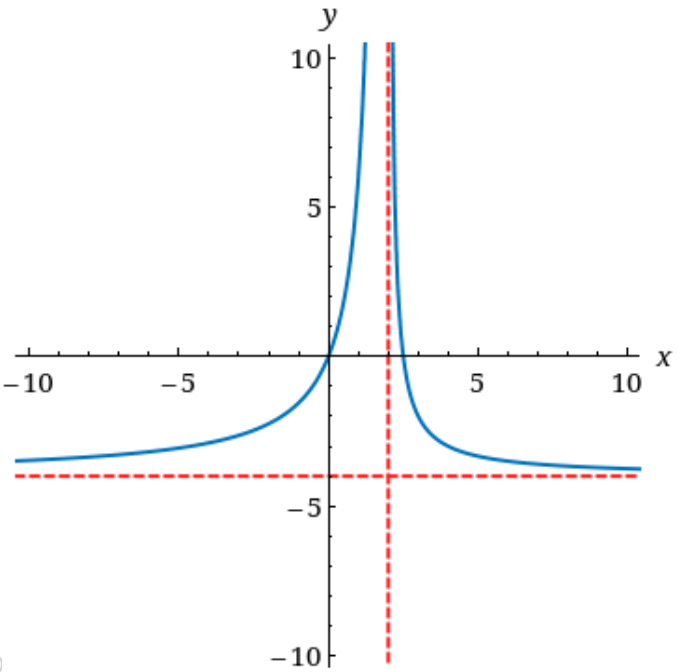
SCalcET9 2.6.006.

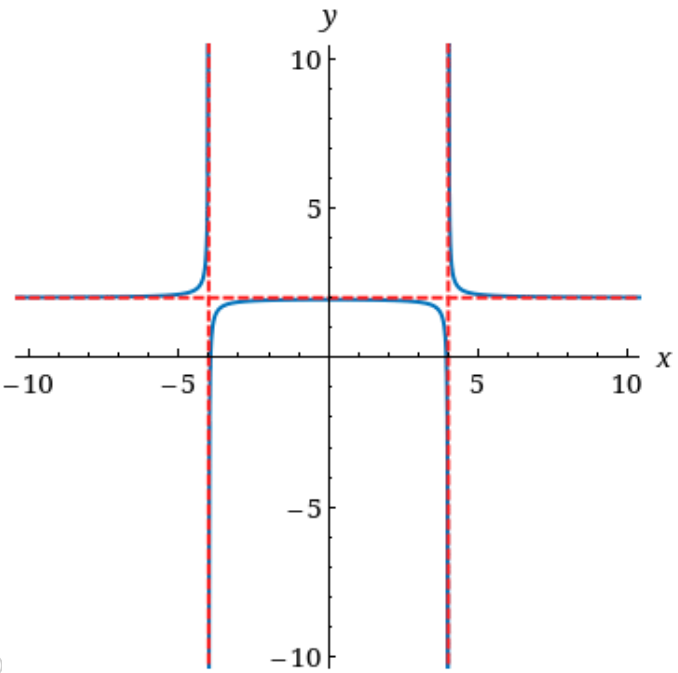
Sketch the graph of an example of a function f that satisfies all of the given conditions.

$$f(0) = 0, \quad \lim_{x \to 2^-} (f(x)) = \infty, \quad \lim_{x \to 2^+} (f(x)) = -\infty, \quad \lim_{x \to -\infty} (f(x)) = -4, \quad \lim_{x \to \infty} (f(x)) = -4$$









That's it!

Resources

Read It

3. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER

PRACTICE ANOTHER

SCalcET9 2.6.025.

Find the limit. (If the limit is infinite, enter '∞' or '-∞', as appropriate. If the limit does not otherwise exist, enter DNE.)

$$\lim_{x \to \infty} \frac{\sqrt{1 + 16x^6}}{5 - x^3}$$

$$-4

Good!

Resources

Read It Watch It

4. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER

PRACTICE ANOTHER

SCalcET9 2.6.024.

Find the limit. (If the limit is infinite, enter '∞' or '-∞', as appropriate. If the limit does not otherwise exist, enter DNE.)

$$\lim_{t \to \infty} \frac{t + 2}{\sqrt{5t^2 - 1}}$$

$$1√5

Well done.

Resources

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5. **[1 / 1 Points]**

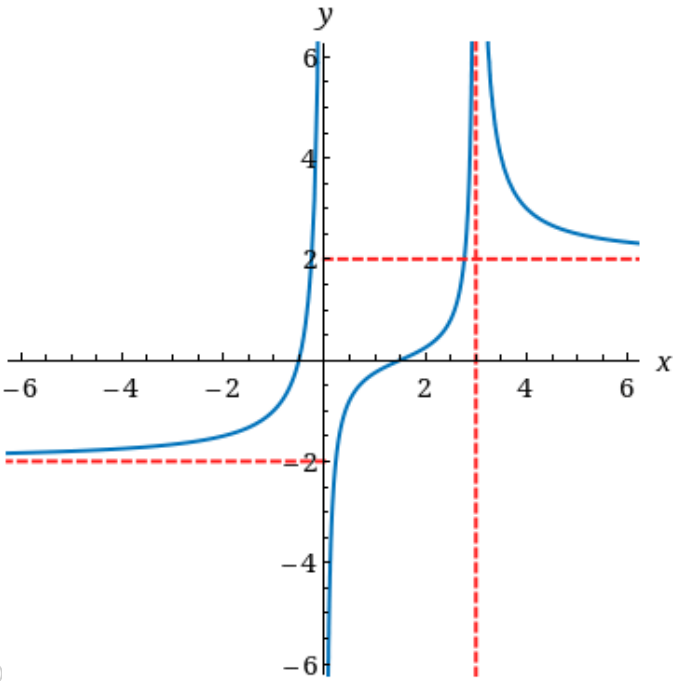
DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER

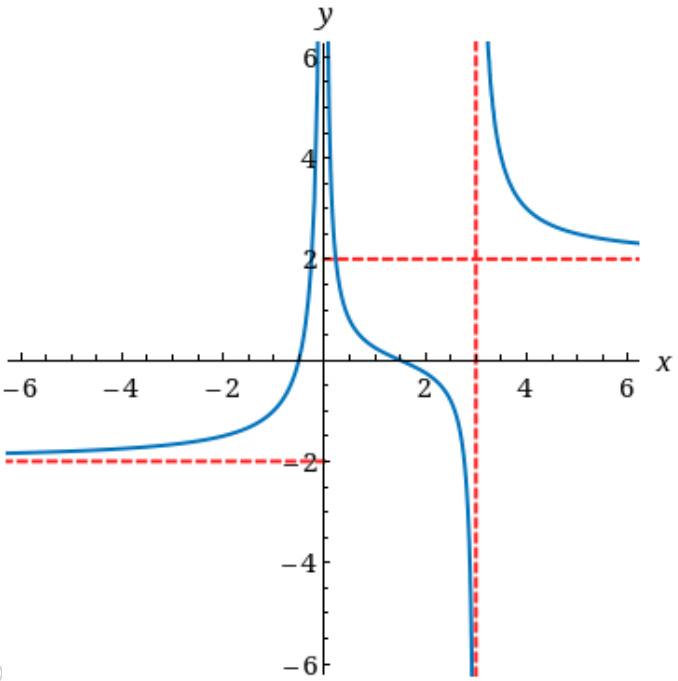
PRACTICE ANOTHER

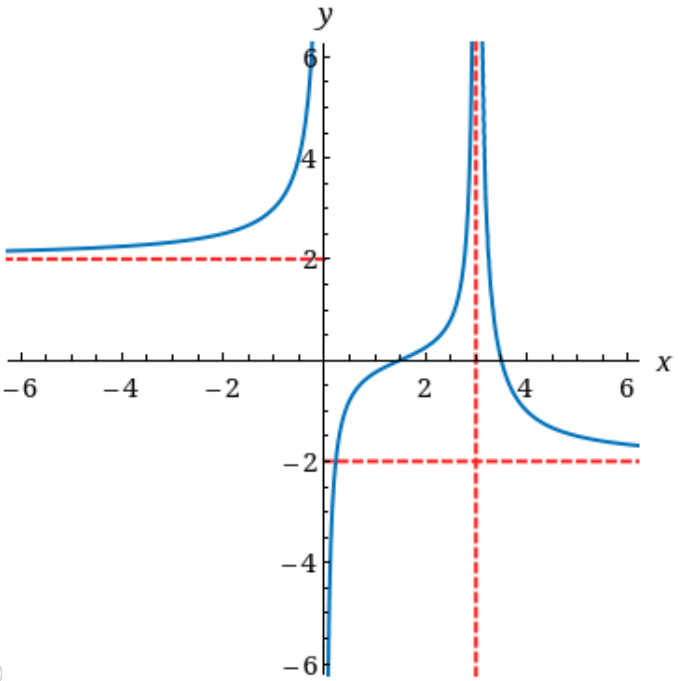
SCalcET9 2.6.007.

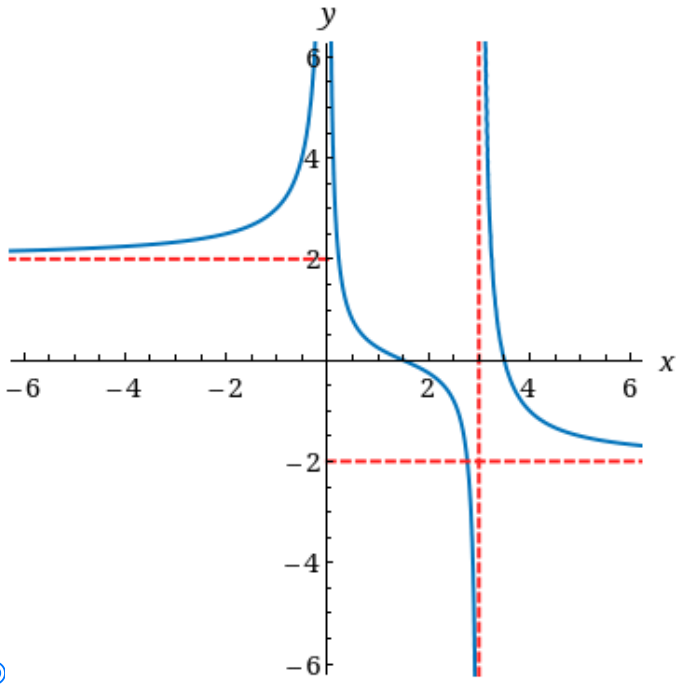
Sketch the graph of an example of a function f that satisfies all of the given conditions.

$$\lim_{x \to 0} (f(x)) = \infty, \quad \lim_{x \to 3^-} (f(x)) = -\infty, \quad \lim_{x \to 3^+} (f(x)) = \infty, \quad \lim_{x \to -\infty} (f(x)) = 2, \quad \lim_{x \to \infty} (f(x)) = -2$$


y
x
6
4
2
−2
−4
−6
−6
−4
−2
2
4
6


y
x
6
4
2
−2
−4
−6
−6
−4
−2
2
4
6





✔ Fantastic!

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6. **[1 / 1 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER

PRACTICE ANOTHER

SCalcET9 2.6.023.

Find the limit. (If the limit is infinite, enter '∞' or '-∞', as appropriate. If the limit does not otherwise exist, enter DNE.)

$$\lim_{x \to \infty} \frac{\sqrt{x + 7x^2}}{2x - 1}$$

$$√72

Way to go!

Resources

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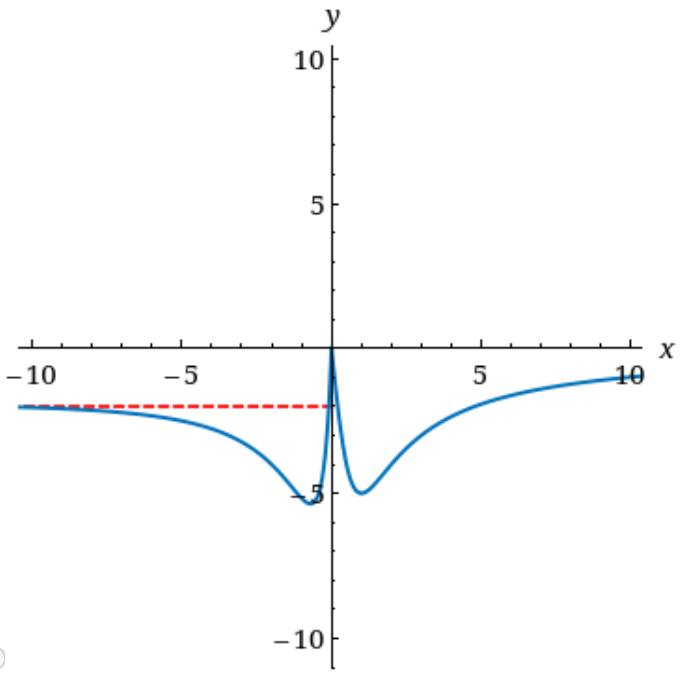
7. **[1 / 1 Points]**

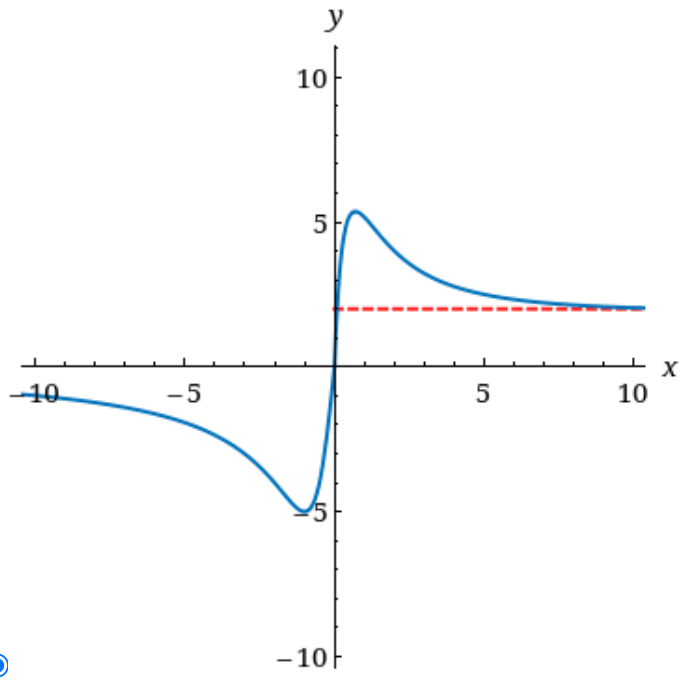
DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER | PRACTICE ANOTHER

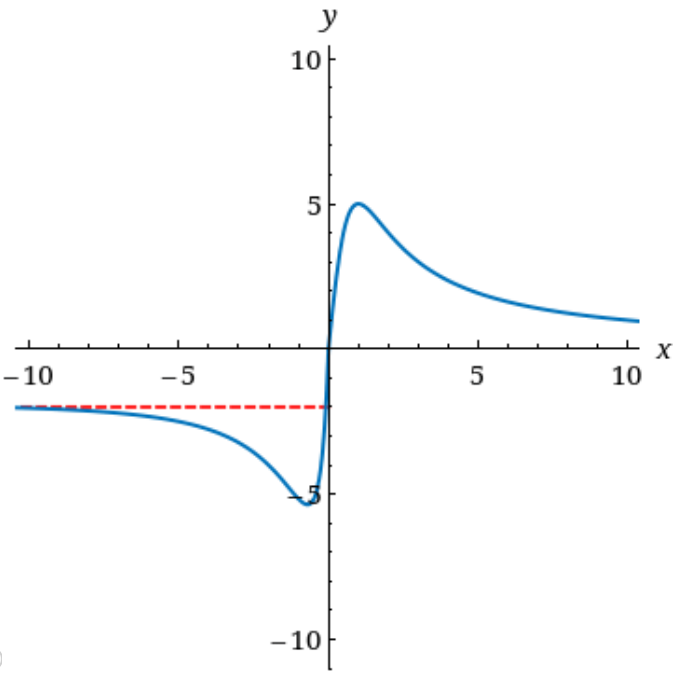
SCalcET9 2.6.005.

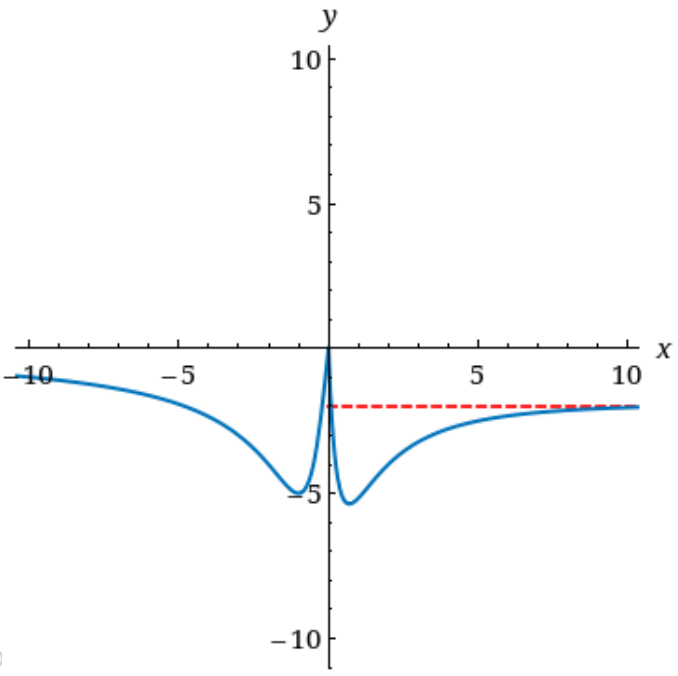
Sketch the graph of an example of a function f that satisfies all of the given conditions.

$f(2) = 4, \quad f(-2) = -4, \quad \lim_{x \to -\infty} (f(x)) = 0, \quad \lim_{x \to \infty} (f(x)) = 2$









That's it!

Resources

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8. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER

PRACTICE ANOTHER

SCalcET9 2.6.052.

Find the horizontal and vertical asymptotes of the curve. You may want to use a graphing calculator (or computer) to check your work by graphing the curve and estimating the asymptotes. (Enter your answers as comma-separated lists. If an answer does not exist, enter DNE.)

$$f(x) = \frac{2e^x}{e^x - 7}$$

x = $$ln(7)

✔ Very nice!

y = $$2, 0

✔ Terrific!

Resources

Read It

9. **[2 / 2 Points]**

DETAILS | MY NOTES | PREVIOUS ANSWERS | ASK YOUR TEACHER

PRACTICE ANOTHER

SCalcET9 2.6.031.

Find the limit. (Let s and t represent arbitrary real numbers. If the limit is infinite, enter '∞' or '-∞', as appropriate. If the limit does not otherwise exist, enter DNE.)

$$\lim_{x \to \infty} \left(\sqrt{x^2 + sx} - \sqrt{x^2 + tx} \right)$$

$$s-t2

✔ Good work.

Resources

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10. **[2 / 2 Points]**

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PRACTICE ANOTHER

SCalcET9 2.6.030.

Find the limit. (If the limit is infinite, enter '∞' or '-∞', as appropriate. If the limit does not otherwise exist, enter DNE.)

$$\lim_{x \to -\infty} \left(\sqrt{49x^2 + 8x} + 7x \right)$$

$$-47

✔ Perfect!

Resources

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