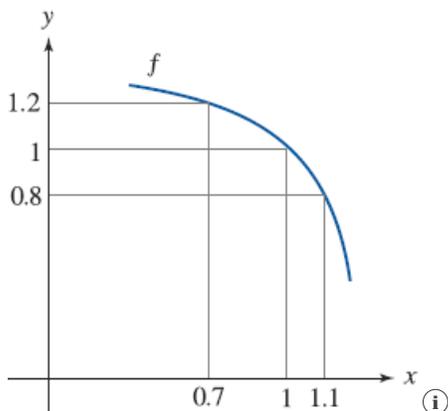


1. [-/1 Points]

DETAILS

SCALCET9 2.4.001.

Use the given graph of f to find a number δ such that if $|x - 1| < \delta$ then $|f(x) - 1| < 0.2$.

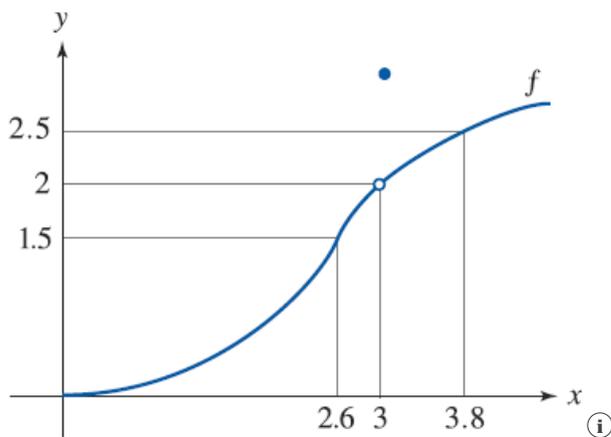
 $\delta =$

2. [-/1 Points]

DETAILS

SCALCET9 2.4.002.

Use the given graph of f to find a number δ such that if $0 < |x - 3| < \delta$ then $|f(x) - 2| < 0.5$.

 $\delta =$

3. [-/1 Points]

DETAILS

SCALCET9 2.5.002.

If f is continuous on $(-\infty, \infty)$, what can you say about its graph? (Select all that apply.)

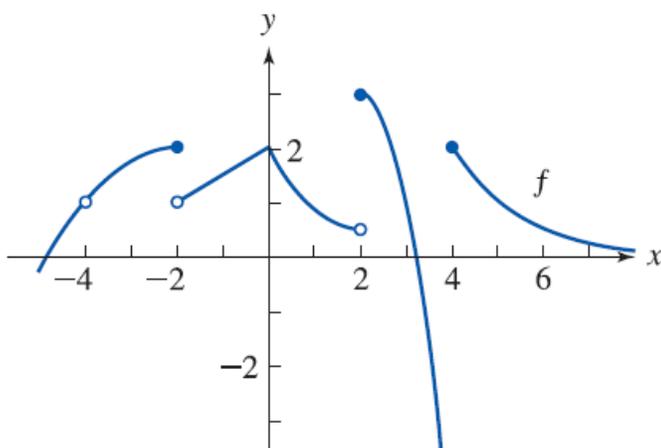
- The graph of f has a hole.
- The graph of f has a jump.
- The graph of f has a vertical asymptote.
- none of these

4. [-/1 Points]

DETAILS

SCALCET9 2.5.003.MI.

Use the graph to determine the x -values at which f is discontinuous. For each x -value, determine whether f is continuous from the right, from the left, or neither. (Enter your answers from smallest to largest.)



①

smallest value $x =$

- continuous from the right
 continuous from the left
 neither

 $x =$

- continuous from the right
 continuous from the left
 neither

 $x =$

- continuous from the right
 continuous from the left
 neither

largest value $x =$

- continuous from the right
 continuous from the left
 neither

Need Help?

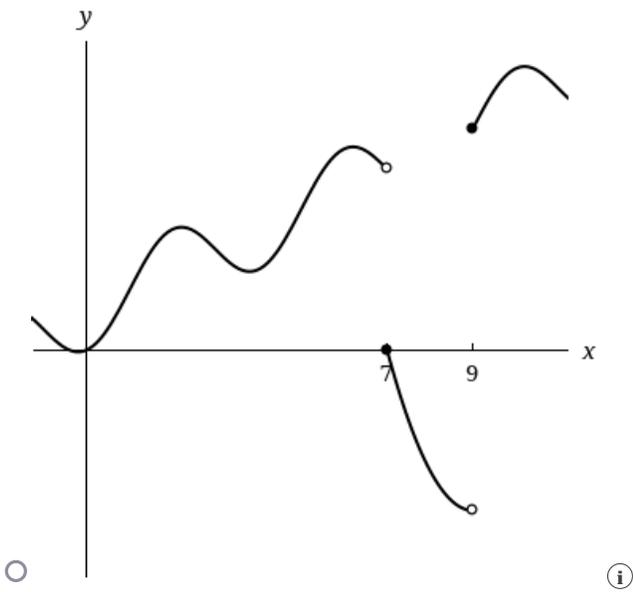
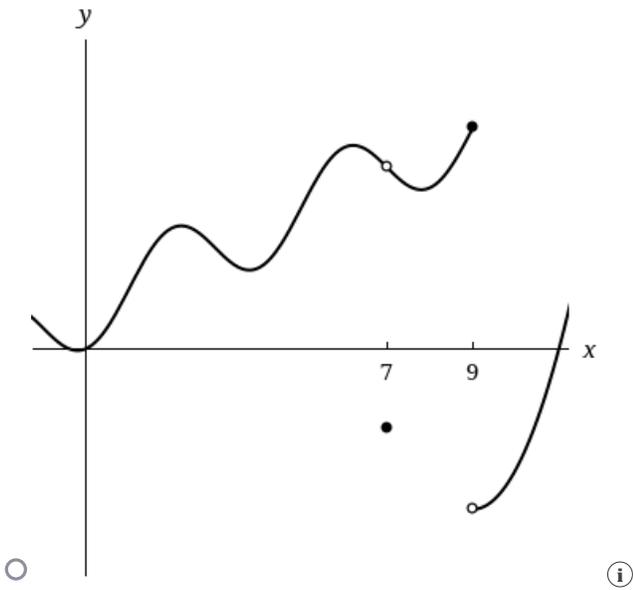
Watch It

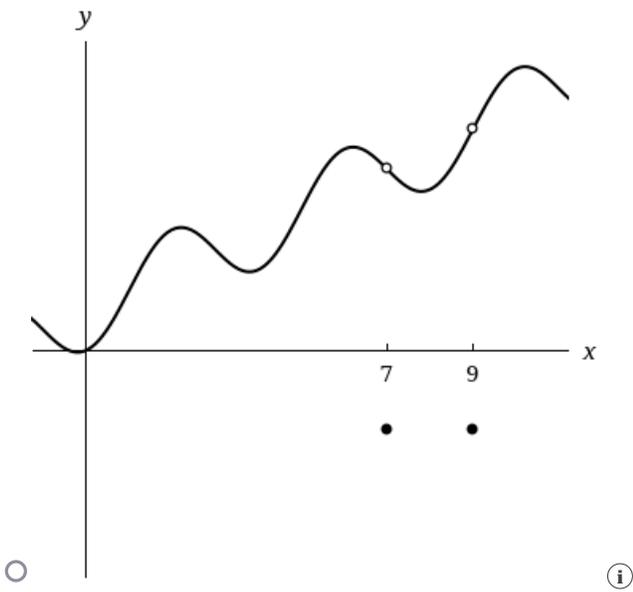
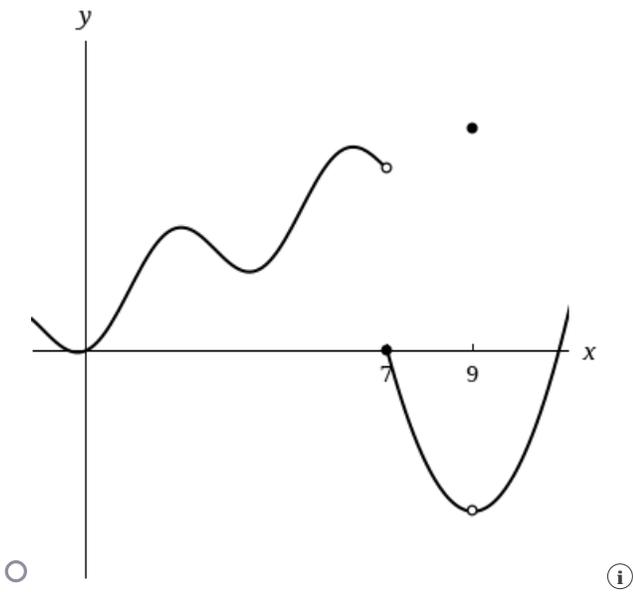
Master It

5. [-1 Points] **DETAILS** SCALCET9 2.5.008.

Sketch the graph of a function f that is defined on \mathbb{R} and continuous except for the stated discontinuities.

jump discontinuity at 9, removable discontinuity at 7





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6. [-/1 Points]

DETAILS

SCALCET9 2.5.019.

Explain why the function is discontinuous at the given number a . (Select all that apply.)

$$f(x) = \frac{1}{x+5} \quad a = -5$$

$f(-5)$ and $\lim_{x \rightarrow -5} f(x)$ are finite, but are not equal.

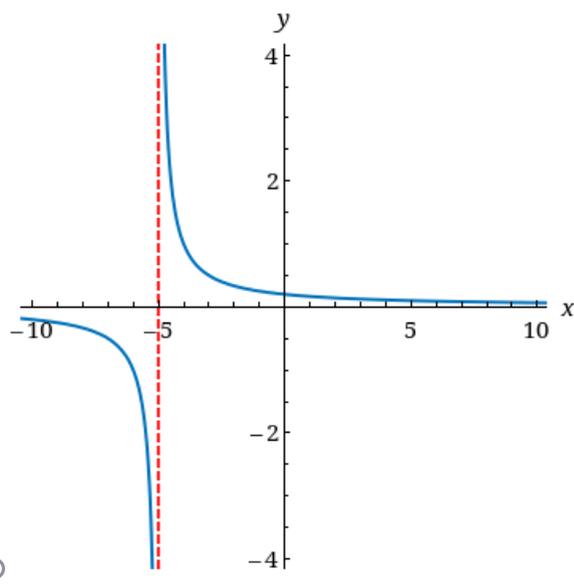
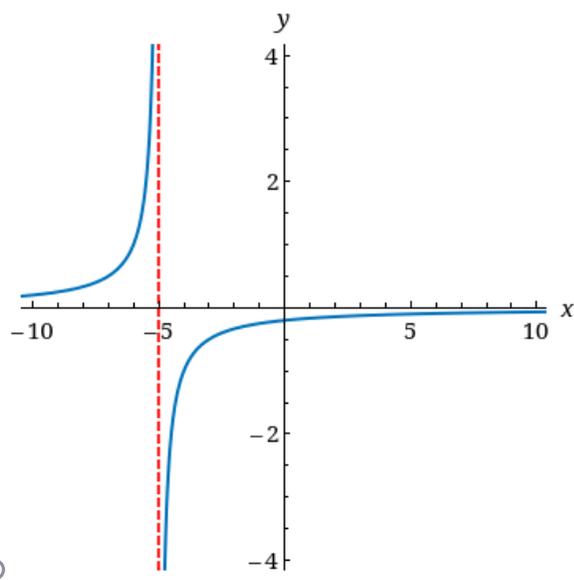
$\lim_{x \rightarrow -5} f(x)$ does not exist.

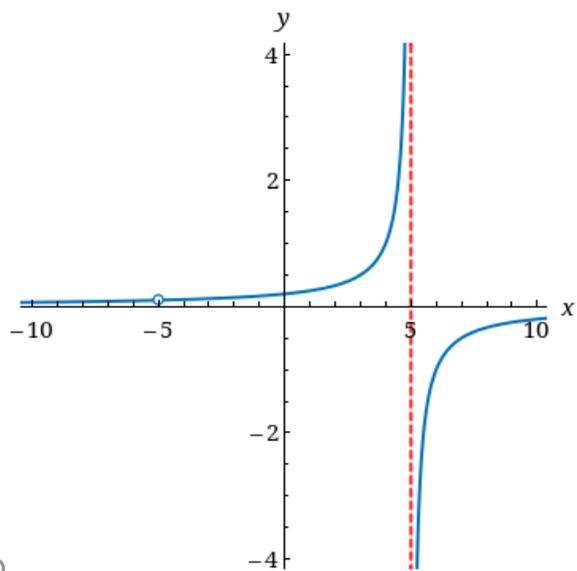
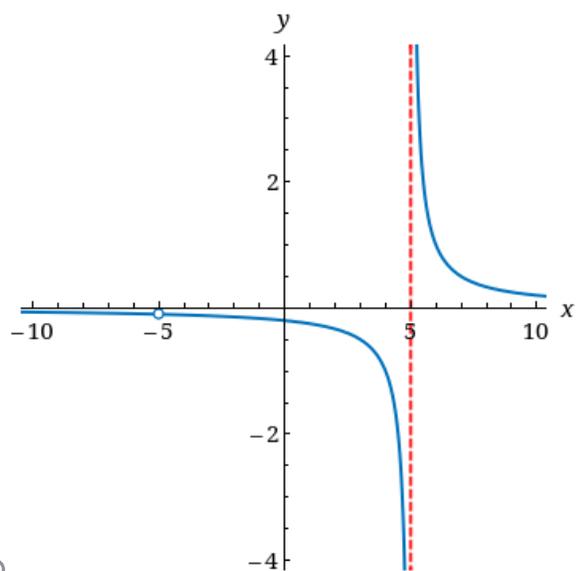
$\lim_{x \rightarrow -5^+} f(x)$ and $\lim_{x \rightarrow -5^-} f(x)$ are not finite, and are not equal.

$f(-5)$ is undefined.

none of the above

Sketch the graph of the function.




 i

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7. [-/1 Points]

DETAILS

SCALCET9 2.5.047.MI.

$$\text{Let } f(x) = \begin{cases} cx^2 + 6x & \text{if } x < 3 \\ x^3 - cx & \text{if } x \geq 3. \end{cases}$$

For what value of the constant c is the function f continuous on $(-\infty, \infty)$?

$c =$

Need Help?

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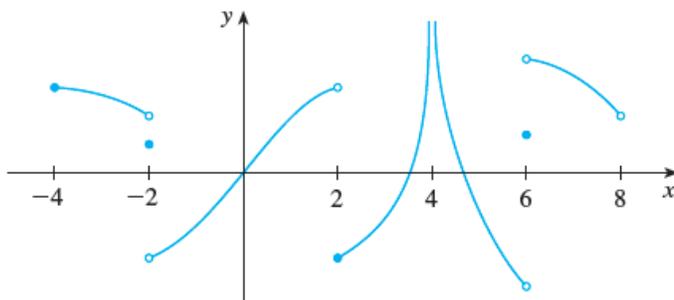
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8. [-1 Points]

DETAILS

SCALCET9 2.XP.5.001.

From the graph of g , state the intervals on which g is continuous.



ⓘ

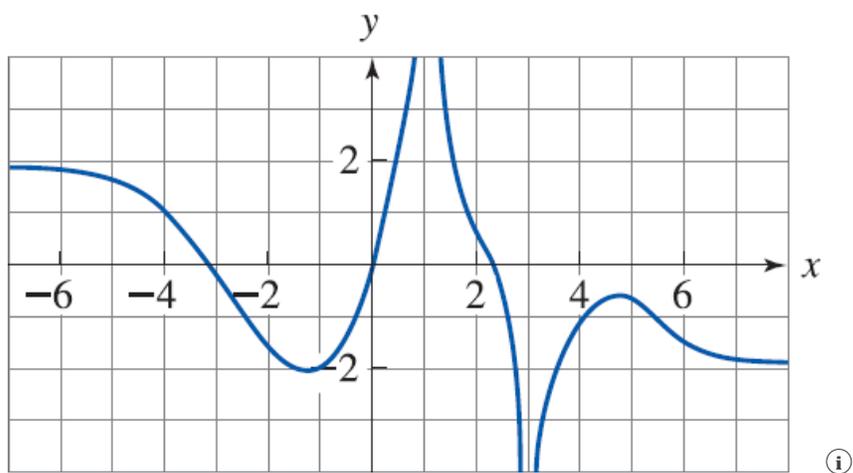
- $[-4, -2), (-2, 2), [2, 4), (4, 6), (6, 8)$
- $[-4, -2), (-2, 2), [2, 6), (6, 8)$
- $[-4, 8)$
- $[-4, -2), (-2, 4), (4, 6), (6, 8)$
- $[-4, -2), (-2, 6), (6, 8)$

9. [-/1 Points]

DETAILS

SCALCET9 2.6.003.

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



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

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

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

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

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

$x =$

$y =$



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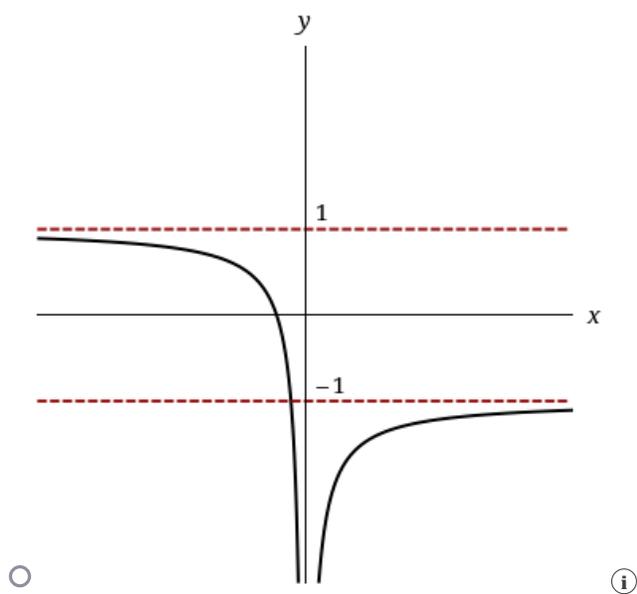
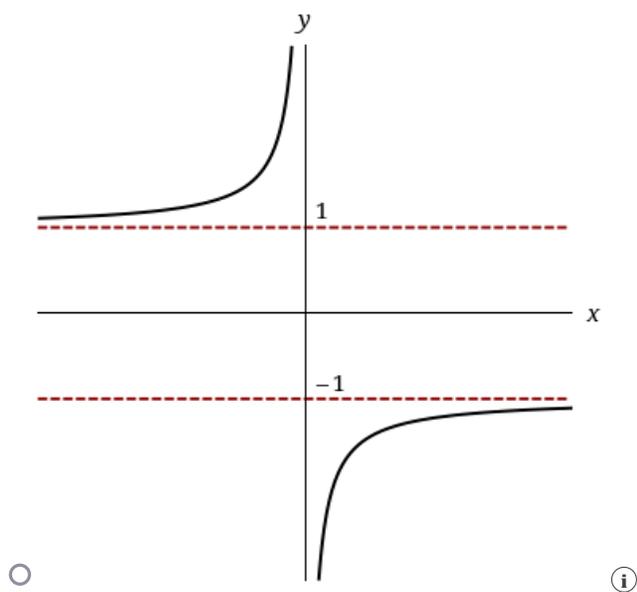
10. [-/1 Points]

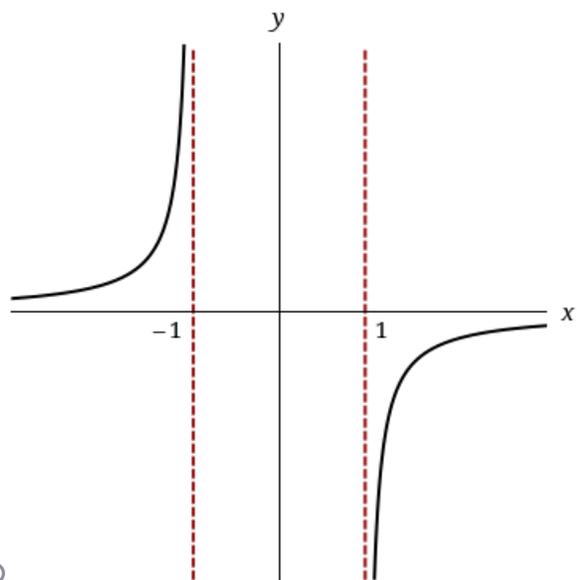
DETAILS

SCALCET9 2.XP.6.001.

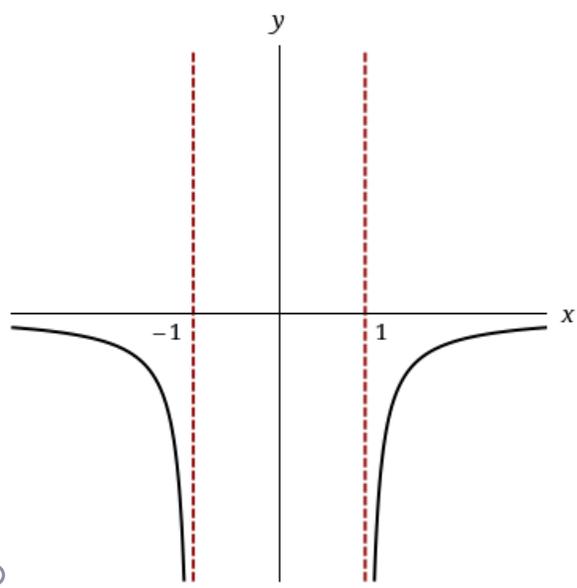
Sketch a graph of a function f that satisfies all of the given conditions.

$$\lim_{x \rightarrow 0} f(x) = -\infty, \quad \lim_{x \rightarrow -\infty} f(x) = 1, \quad \lim_{x \rightarrow \infty} f(x) = -1$$





i



i

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11. [-/1 Points]

DETAILS

SCALCET9 2.6.013.MI.

Evaluate the limit using the appropriate properties of limits. (If the limit is infinite, enter ' ∞ ' or ' $-\infty$ ', as appropriate. If the limit does not otherwise exist, enter DNE.)

$$\lim_{x \rightarrow \infty} \frac{4x^2 - 5}{9x^2 + x - 3}$$

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12. [-/1 Points]

DETAILS

SCALCET9 2.XP.6.005.

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

$$\lim_{x \rightarrow \infty} \frac{7x - 8}{2x + 5}$$

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13. [-/1 Points]

DETAILS

SCALCET9 2.XP.6.006.

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

$$\lim_{x \rightarrow \infty} \left(\frac{x - 2}{x^2 + 3} \right)$$

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14. [-/1 Points]

DETAILS

SCALCET9 2.XP.6.007.

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

$$\lim_{t \rightarrow \infty} \frac{\sqrt{t} + t^2}{7t - t^2}$$

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15. [-/1 Points]

DETAILS

SCALCET9 2.XP.6.008.

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

$$\lim_{x \rightarrow \infty} \frac{x^4}{\sqrt{x^8 + 6}}$$

16. [-/1 Points]

DETAILS

SCALCET9 2.XP.6.018.

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

$$\lim_{x \rightarrow \infty} \left(\sqrt{81x^2 + x} - 9x \right)$$

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17. [-/1 Points]

DETAILS

SCALCET9 2.XP.6.009.

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

$$\lim_{x \rightarrow \infty} \frac{x^4 - 4x^2 + x}{x^3 - x + 6}$$

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18. [-/1 Points]

DETAILS

SCALCET9 2.6.037.

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

$$\lim_{x \rightarrow \infty} \frac{7 - e^x}{7 + 4e^x}$$

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19. [-/1 Points]

DETAILS

SCALCET9 2.6.068.

A tank contains 1,000 L of pure water. Brine that contains 25 g of salt per liter of water is pumped into the tank at a rate of 25 L/min.

- (a) Find the concentration of salt after t minutes (in g/L).

 $C(t) =$

g/L

- (b) What happens to the concentration (in g/L) as $t \rightarrow \infty$?

g/L

Need Help?

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20. [-/1 Points]

DETAILS

SCALCET9 2.XP.6.004.

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

$$\lim_{x \rightarrow \infty} \frac{1}{5x + 7}$$