- 1. The function g is continuous at all x except x = 2. If $\lim_{x \to 2} g(x) = \infty$, which of the following statements about g must be true?
- (A) $g(2) = \infty$ X exact point
- B The line x = 2 is a horizontal asymptote to the graph of g.
- The line x = 2 is a vertical asymptote to the graph of g.
- D The line y=2 is a vertical asymptote to the graph of g.



The function g is defined by $g(x) = \left(\frac{x^2 - 3x - 10}{x - 5}\right) \ln\left(\frac{x^2 + 6x + 9}{x^3 + 3x^2}\right)$. At what values of x does the graph of ghave a vertical asymptote?

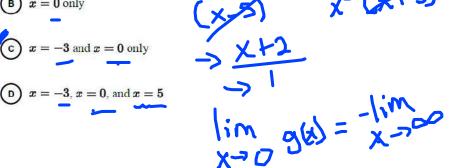
have a vertical asymptote?

$$x = -3 \text{ only}$$

$$x + 3$$

$$x + 3$$





- 5. The values f(x) of a function f can be made arbitrarily large by taking x sufficiently close to 1 but not equal to 1. Which of the following statements must be true?
- igapha f(1) does not exist.
- B f is continuous at x = 1.
- $\bigcirc \lim_{x\to 1} f(x) = \infty \quad \checkmark$

1. Let f be the function given by $f(x) = \frac{(\cos x)e^{2x}-1}{e^{2x-1}+2}$. What are all horizontal asymptotes to the graph of f?

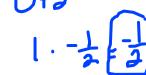
$$y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}{2} \text{ only} \qquad \qquad \lim_{x \to -\infty} y = -\frac{1}$$

 $y = e_{\text{only}}$

(c)
$$y = -\frac{1}{2}$$
 and $y = e$

(c)
$$y = -\frac{1}{2}$$
 and $y = 0$

The graph of f has no horizontal asymptotes.



3. Let f be the function defined by $f(x) = \frac{2-x+3x^2+5x^3-7x^{2}}{x^4-2x^3-5x^2+2x-3}$ for x > 0. Which of the following is a horizontal asymptote to the graph of f?

$$y = -7$$

- (B) y=2
- (c) y=7
- D There is no horizontal asymptote to the graph of f.

4. Let f be the function given by $f(x) = \frac{1 + e^x \sin x}{e^{x-1} - 1}$. What are all horizontal asymptotes of the graph of f?

