1.9 Rational Functions & Vertical Asymptotes

AP Precalculus

Name: _____

CA #1

Find the vertical asymptote(s) of the following rational functions, if one exists.

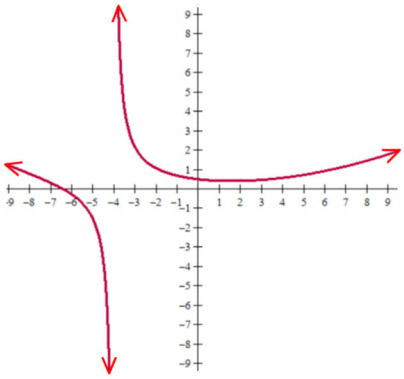
1. $$f(x) = \frac{x^2 - 4}{x^2 - 8x - 20}$$

2. $$g(x) = \frac{x^2 + 3x}{x^2 - 9x + 18}$$

3. $$h(t) = \frac{t^2 - 2t - 48}{t^2 + 12t + 36}$$

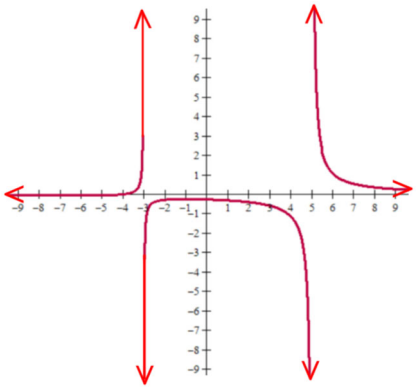
Use the graph of f to find the vertical asymptote(s). Use limit notation.

4.



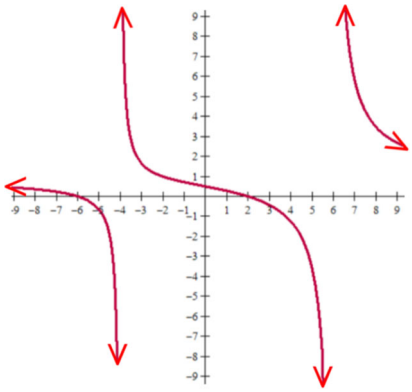
Limit Notation Vertical Asymptote(s):

5.



Limit Notation Vertical Asymptote(s):

6.



Limit Notation Vertical Asymptote(s):

CALCULATOR ACTIVE Complete the table to answer the following.

7. $f(x) = \frac{x+5}{x-2}$

x	1.9	1.99	1.999	2	2.001	2.01	2.1
$f(x)$							

Vertical Asymptote: Limit Notation of Vertical Asymptote:

CALCULATOR ACTIVE Complete the table to answer the following.

8. $f(x) = \frac{x^3+8}{x^2+3x}$

x	-3.1	-3.01	-3.001	-3	-2.999	-2.99	-2.9
$f(x)$							

Vertical Asymptote: Limit Notation of Vertical Asymptote:

Answers to 1.9 CA #1

1. $x = 10$

2. $x = 3$ and 6

3. $t = -6$

4. $\lim_{x\to -4^-} f(x) = -\infty$ and $\lim_{x\to -4^+} f(x) = \infty$

5. $\lim_{x\to -3^-} f(x) = \infty$ and $\lim_{x\to -3^+} f(x) = -\infty$
$\lim_{x\to 5^-} f(x) = -\infty$ and $\lim_{x\to 5^+} f(x) = \infty$

6. $\lim_{x\to -4^-} f(x) = -\infty$ and $\lim_{x\to -4^+} f(x) = \infty$
$\lim_{x\to 6^-} f(x) = -\infty$ and $\lim_{x\to 6^+} f(x) = \infty$

7.

x	$f(x)$
1.9	-69
1.99	-699
1.999	-6999
2	undefined
2.001	7001
2.01	701
2.1	71

vertical asymptote: $x = 2$

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

8.

x	$f(x)$
-3.1	-70.29
-3.01	-640.2
-3.001	-6340
-3	undefined
-2.999	6326.4
-2.99	626.45
-2.9	56.51

vertical asymptote: $x = -3$

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