| State the domain of the following rational functions. Use interval notation. |

1. $f(x) = \dfrac{x^3+1}{x^2-16}$

2. $h(x) = \dfrac{x+3}{2x^2+10x-28}$

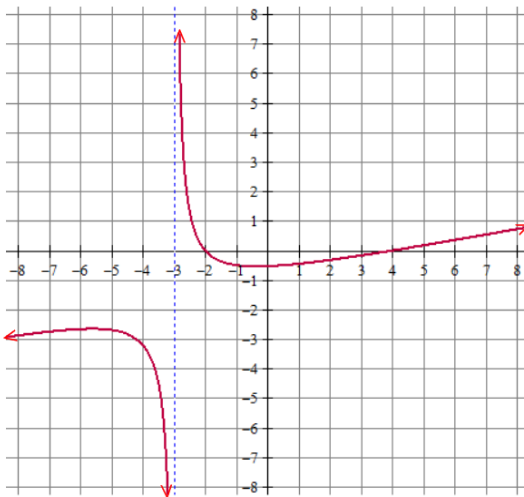3. $d(t) = \dfrac{t^2-3t+1}{4-3t}$

Domain:

Domain:

Domain:

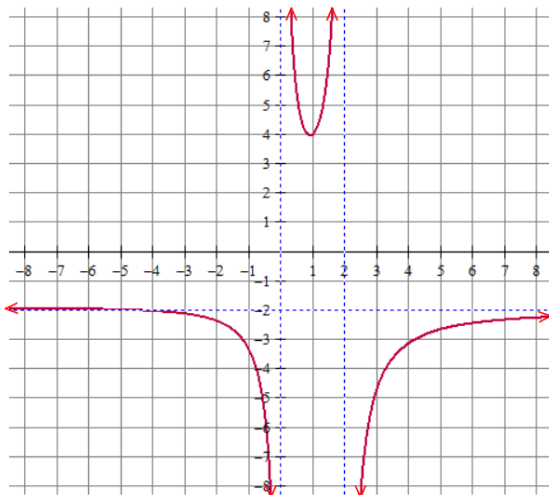| Use the graph of the rational function f to find the following. |

4.

Domain:

End Behavior:

Is there horizontal aysmptote?
If so, write the equation of the horizontal aysmptote.

5.

Domain:

End Behavior:

Is there horizontal aysmptote?
If so, write the equation of the horizontal aysmptote.

Continued on the back.

6. $f(x) = \dfrac{x^2}{x^2-4x}$

x	$-10{,}000$	$-1{,}000$	-100	100	$1{,}000$	$10{,}000$
$f(x)$						

End Behavior:

Is there horizontal aysmptote?
If so, write the equation of the horizontal aysmptote.

7. $d(t) = \dfrac{t^3-3t}{2t+1}$

t	$-5{,}000$	-500	-50	50	500	$5{,}000$
$d(t)$						

End Behavior:

Is there horizontal aysmptote?
If so, write the equation of the horizontal aysmptote.

Answers to 1.7A CA #1

1. $(-\infty,-4) \cup (-4,4) \cup (4,\infty)$

2. $(-\infty,-7) \cup (-7,2) \cup (2,\infty)$

3. $\left(-\infty,\frac{4}{3}\right) \cup \left(\frac{4}{3},\infty\right)$

4. Domain: $(-\infty,-3) \cup (-3,\infty)$

   End Behavior:

   $\displaystyle\lim_{x\to-\infty} f(x) = -\infty$ and $\displaystyle\lim_{x\to\infty} f(x) = \infty$

   Horizontal Asymptote: none

5. Domain: $(-\infty,0) \cup (0,2) \cup (2,\infty)$

   End Behavior:

   $\displaystyle\lim_{x\to-\infty} f(x) = -2$ and $\displaystyle\lim_{x\to\infty} f(x) = -2$

   Horizontal Asymptote: $y = -2$

6.

x	$f(x)$
-10,000	0.9996
-1,000	0.99602
-100	0.9615
100	1.0417
1,000	1.004
10,000	1.0004

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

$\displaystyle\lim_{x\to\infty} f(x) = 1$

HA: $y = 1$

7.

t	$d(t)$
-5,000	$\approx 1.2 \times 10^7$
-500	125124
-50	1261.1
50	1236.1
500	124874
5,000	$\approx 1.2 \times 10^7$

$\displaystyle\lim_{t\to-\infty} f(x) = \infty$

$\displaystyle\lim_{t\to\infty} f(x) = \infty$

HA: none