

2.6 Day 2

Tuesday, September 27, 2016 8:22 AM



Precalculus

2.6 Graphs of Rational Functions

Name _____

1. Identify domain, vertical asymptote(s), and horizontal asymptotes.

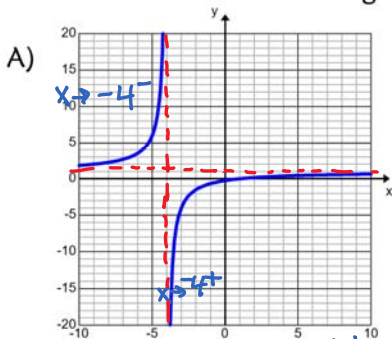
A) $f(x) = \frac{x-3}{x^2-2x-3} = \frac{\cancel{x-3}}{(\cancel{x-3})(x+1)} = \frac{1}{x+1}$

V.A. $x = -1$
 (Rem. disc. @ $x = 3$)
 Dom: $(-\infty, -1) \cup (-1, 3) \cup (3, \infty)$
 H.A. $y = 0$
sm. deg / big deg

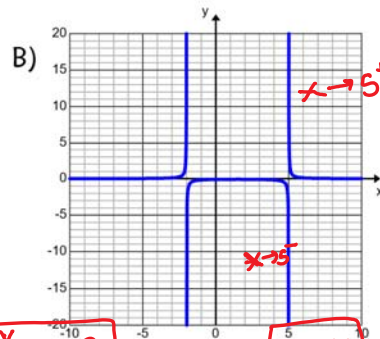
B) $f(x) = \frac{x^2+4x-5}{x^2-3x+2} = \frac{(x-1)(x+5)}{(x-1)(x-2)} = \frac{x+5}{x-2}$

V.A. $x = 2$
 Rem. disc. $x = 1$
 Dom: $(-\infty, 1) \cup (1, 2) \cup (2, \infty)$
 H.A. $y = 1$
same deg / same deg

2. Look at the graph and determine Vertical Asymptotes, Horizontal Asymptotes, and use limits to describe the behavior of the graph.



V.A.: $x = -4$
 $\lim_{x \rightarrow -4^+} f(x) = -\infty$
 $\lim_{x \rightarrow -4^-} f(x) = \infty$
 H.A.: $y = 1$
 $\lim_{x \rightarrow \infty} f(x) = 1$
 $\lim_{x \rightarrow -\infty} f(x) = 1$

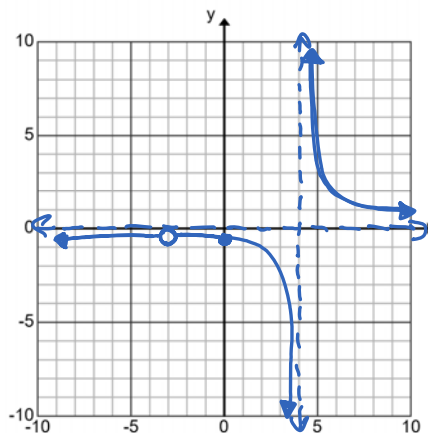


$x = -2$
 $\lim_{x \rightarrow -2^-} f(x) = \infty$
 $\lim_{x \rightarrow -2^+} f(x) = -\infty$
 $x = 5$
 $\lim_{x \rightarrow 5^-} f(x) = -\infty$
 $\lim_{x \rightarrow 5^+} f(x) = \infty$
 H.A. $y = 0$
 $\lim_{x \rightarrow \infty} f(x) = 0$
 $\lim_{x \rightarrow -\infty} f(x) = 0$

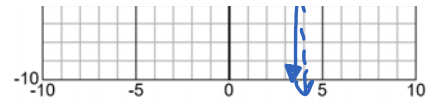
3. Find V.A., R.D., H.A., intercepts, describe end behavior, and graph.

A) $f(x) = \frac{x+3}{x^2-x-12} = \frac{\cancel{x+3}}{(\cancel{x+3})(x-4)} = \frac{1}{x-4}$

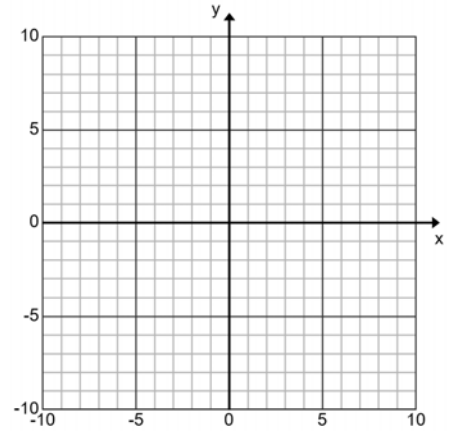
V.A. $x = 4$
 R.D. $(-3, -\frac{1}{4})$
 H.A. $y = 0$
 y-int $(0, -\frac{1}{4})$
 (x=0)
 x-int $(4, 0)$
 (u=0)



$$\begin{array}{l}
 (x=0) \\
 x\text{-int} \\
 (y=0)
 \end{array}
 \quad
 \begin{array}{l}
 0 = \frac{1}{x-4} \\
 0 = 1 \text{ None}
 \end{array}$$



B) $f(x) = \frac{4x^2}{x^2 - 9}$



C) $f(x) = \frac{x-1}{x^2 - 2x - 8}$

