Graphing Review

Friday, September 11, 2015
10:41 AM

Limit Bingo Answers:

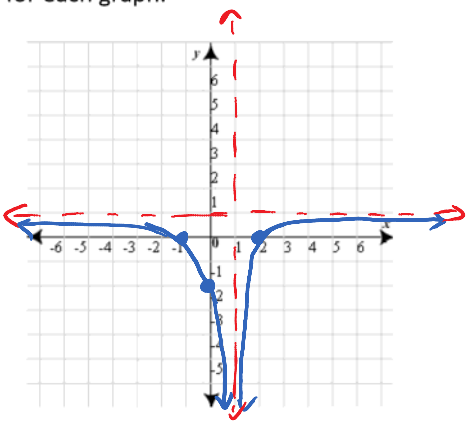
21	8	16	2	6
4	9	23	17	19
15	22	20	18	3
24	1	7	10	11
5	x	12	14	13

Limits, Asymptotes, and Graph Sketching Name Key

Sketch a graph that fulfills all the conditions. Find a rational function for each graph.

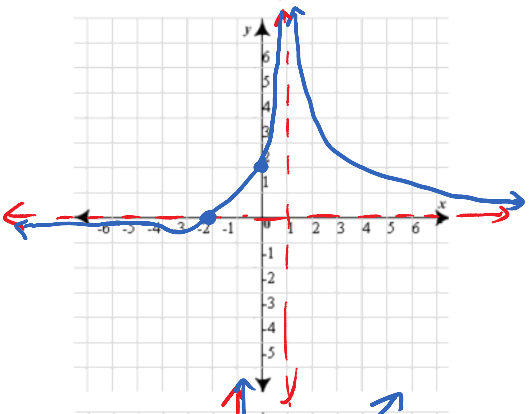
1. $f(x) = 0$ at $x = -1, 2$ → (-1, 0) (2, 0)
   $\lim_{x\to\infty} f(x) = 1$
   $\lim_{x\to-\infty} f(x) = 1$] HA $y = 1$
   $\lim_{x\to 1} f(x) = -\infty$ → VA $x = 1$
   $y - intercept = -2$ → (0, -2)

   $y = \dfrac{(x+1)(x-2)}{(x-1)^2}$ ← double VA b/c both sides go to $-\infty$



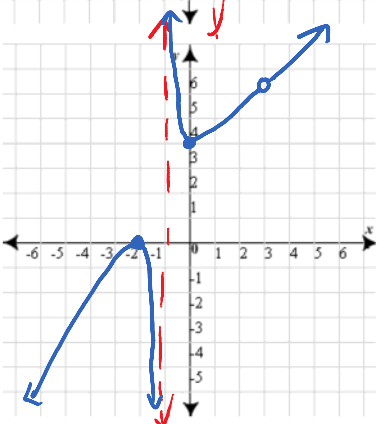
2. $f(x) = 0$ at $x = -2$ → (-2, 0)
   $f(0) = 2$ → (0, 2)
   $\lim_{x\to\infty} f(x) = 0$
   $\lim_{x\to-\infty} f(x) = 0$] HA $y = 0$
   $\lim_{x\to 1} f(x) = \infty$ → VA $x = 1$

   $y = \dfrac{(x+2)}{(x-1)^2}$



3. $f(x) = 0$ at $x = -2$ (double root) (-2, 0) ← bounce off x-axis
   $f(0) = 4$, DNE at $x = -1, 3$ hole or asymp (0, 4)
   $\lim_{x\to\infty} f(x) = \infty$
   $\lim_{x\to-\infty} f(x) = -\infty$] No HA
   $\lim_{x\to 3} f(x) = \frac{25}{4}$ as $x \to 3$, $y \to 6\frac{1}{4}$

   $y = \dfrac{(x+2)^2(x+3)}{(x+1)(x+3)}$



4. $f(x) = 0$ at $x = -2$ → (-2, 0)
   $f(0) = 4$, DNE at $x = -1, 3$ hole or asymp (0, 4)
   $\lim_{x\to\infty} f(x) = 2$
   $\lim_{x\to-\infty} f(x) = 2$] HA $y = 2$
   $\lim_{x\to-1} f(x) = DNE$] possible VA

   $y = \dfrac{2(x+2)(x-3)}{(x+1)(x-3)}$