

11. Is $x + 5$ a factor of $x^3 + 9x^2 + 23x + 15$? Is $x - 1$ a factor?

12. Find the asymptotes:

A. $f(x) = \frac{2x^2 + 5x + 3}{x^3 - 9x}$

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

13. Sketch a graph of the rational function described below:

has an x- and y-intercept at the origin

has vertical asymptotes $x = -3$ and $x = 4$

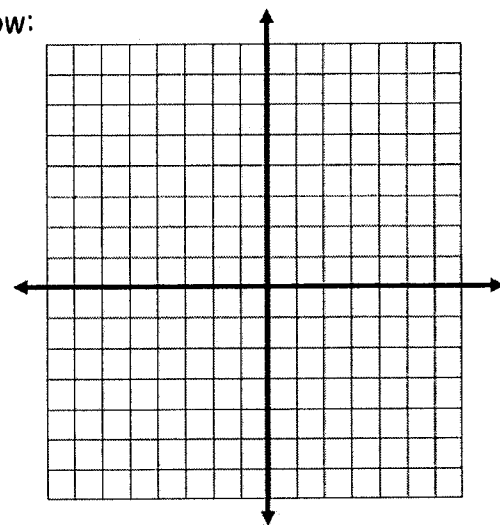
has horizontal asymptote $y = 0$

as $x \rightarrow 4^+$, $y \rightarrow \infty$

as $x \rightarrow 4^-$, $y \rightarrow \infty$

as $x \rightarrow -3^+$, $y \rightarrow \infty$

as $x \rightarrow -3^-$, $y \rightarrow -\infty$



14. Powell Power Company charges .09 cents per kilowatt-hour for the first 200 kWh. The company charges .11 cents per kilowatt-hour for all electrical usage in excess of 200 kWh. There is a standard \$8.52 monthly usage fee.

A. Write a piecewise function for the situation.

B. How much does a customer who uses 150 kWh pay?

C. How much does a customer who uses 275 kWh pay?

15. A super-duper bottle rocket is launched vertically into the air from the ground at an initial velocity of 80 feet per second. Find the highest point reached by the firework just as it explodes. Find the time the shell hits the ground.

16. In the town of Powellville, natural gas is the primary resource. The table shows the amount of natural gas produced each year. Find a quadratic regression and use it to predict the year that gas production will be zero.

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Natural Gas Produced (millions of m ³)	1.6	2.1	3.0	4.1	4.3	4.4	3.6	2.1	0.5