

For each function, complete the list of information:

1. Describe the domain.
2. Identify any holes in the graph.
3. Identify the vertical asymptotes.
4. Find the x- and y-intercepts.

<p>a. $f(x) = \frac{3x-6}{x^3-4x} = \frac{3(x-2)}{x(x^2-4)} = \frac{3(x-2)}{x(x+2)(x-2)}$</p> <p>Domain: $\mathbb{R}; x \neq 0, -2, 2$</p> <p>Holes: $x = 2$</p> <p>VA: $x = 0, x = -2$</p> <p>HA: $y = 0$</p> <p>x-int: none y-int: none</p>	<p>b. $f(x) = \frac{x^2+3x-10}{x^2+8x+15} = \frac{(x+5)(x-2)}{(x+3)(x+5)}$</p> <p>Domain: $\mathbb{R}; x \neq -3, -5$</p> <p>Holes: $x = 5$</p> <p>VA: $x = -3$</p> <p>HA: $y = 1$</p> <p>x-int: $x = 2$ y-int: $\frac{-10}{15} = -\frac{2}{3}$</p>
<p>c. $f(x) = \frac{x^2+5x+6}{x+3} = \frac{(x+2)(x+3)}{(x+3)}$</p> <p>Domain: $\mathbb{R}; x \neq -3$</p> <p>Hole: $x = -3$</p> <p>VA: none</p> <p>HA: none</p> <p>x-int: $x = -2$ y-int: $\frac{6}{3} = 2$</p>	<p>d. $f(x) = \frac{x^2+x-12}{x-4} = \frac{(x+4)(x-3)}{x-4}$</p> <p>Domain: $\mathbb{R}; x \neq 4$</p> <p>Hole: none</p> <p>VA: $x = 4$</p> <p>HA: none</p> <p>x-int: $x = -4, x = 3$ y-int: $\frac{-12}{-4} = 3$</p>
<p>e. $f(x) = \frac{x-4}{x^2-x-12} = \frac{x-4}{(x-4)(x+3)}$</p> <p>Domain: $\mathbb{R}; x \neq 4, -3$</p> <p>Hole: $x = 4$</p> <p>VA: $x = -3$</p> <p>HA: $y = 0$</p> <p>x-int: $x = 4$ y-int: $\frac{-4}{-12} = \frac{1}{3}$</p>	<p>f. $f(x) = \frac{2x+1}{x^2-x} = \frac{2x+1}{x(x-1)}$</p> <p>Domain: $\mathbb{R}; x \neq 0, 1$</p> <p>Hole: none</p> <p>VA: $x = 0, x = 1$</p> <p>HA: $y = 0$</p> <p>x-int: $-\frac{1}{2}$ y-int: none</p>
<p>g. $f(x) = \frac{x^2-x-2}{x-2} = \frac{(x-2)(x+1)}{x-2}$</p> <p>Domain: $\mathbb{R}; x \neq 2$</p> <p>Hole: $x = 2$</p> <p>VA: none</p> <p>HA: none</p> <p>x-int: $x = -1$ y-int: 1</p>	<p>h. $f(x) = \frac{3x-9}{x^3-9x} = \frac{3(x-3)}{x(x^2-9)} = \frac{3(x-3)}{x(x+3)(x-3)}$</p> <p>Domain: $\mathbb{R}; x \neq 0, -3, 3$</p> <p>Hole: $x = 3$</p> <p>VA: $x = 0, x = -3$</p> <p>HA: $y = 0$</p> <p>x-int: none y-int: none</p>