

Identify the points of discontinuity, holes, vertical asymptotes, x-intercepts, and horizontal asymptote of each.

1) $f(x) = \frac{1}{3x^2 + 3x - 18}$

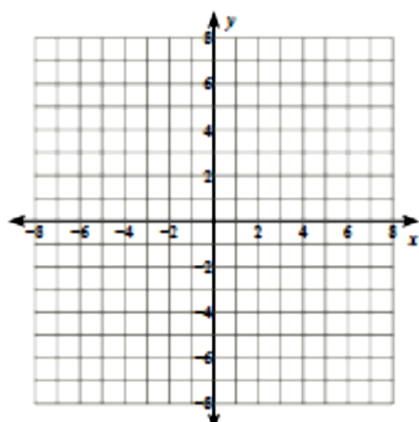
2) $f(x) = \frac{x-2}{x-4}$

3) $f(x) = \frac{x^3 - x^2 - 6x}{-3x^2 - 3x + 18}$

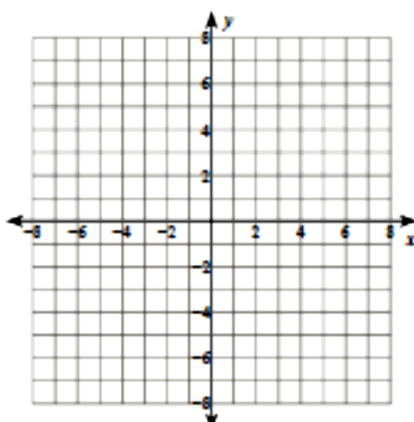
4) $f(x) = \frac{x^2 + x - 6}{-4x^2 - 16x - 12}$

Identify the points of discontinuity, holes, vertical asymptotes, and horizontal asymptote of each. Then sketch the graph.

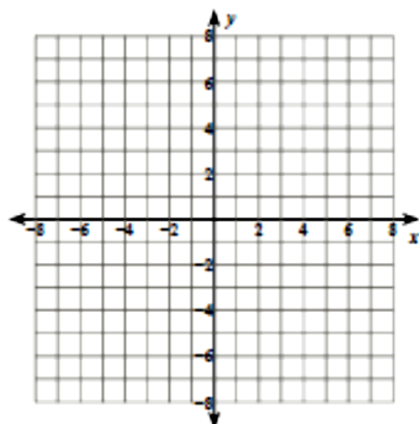
5) $f(x) = -\frac{4}{x^2 - 3x}$



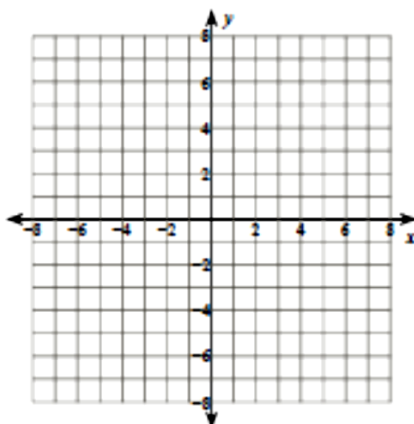
6) $f(x) = \frac{x-4}{-4x-16}$



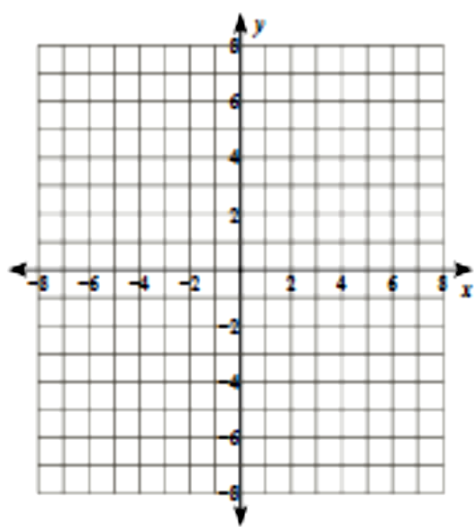
7) $f(x) = \frac{x+4}{-2x-6}$



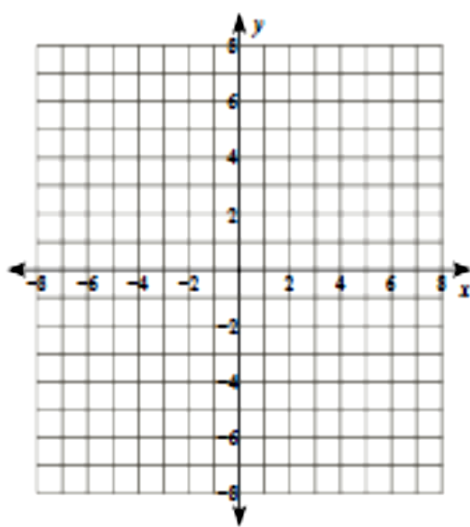
8) $f(x) = \frac{x^3 - 9x}{3x^2 - 6x - 9}$



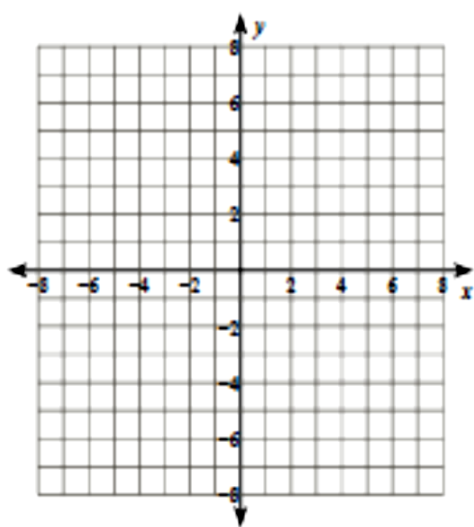
$$9) f(x) = \frac{3x^2 - 12x}{x^2 - 2x - 3}$$



$$10) f(x) = \frac{x^3 - 16x}{-4x^2 + 4x + 24}$$



$$11) f(x) = \frac{x^2 + 2x}{-4x + 8}$$



$$12) f(x) = \frac{x + 2}{2x + 6}$$

