Graphing Rational Functions Practice

MATH MONKS

For each function, identify the points of discontinuity, holes, x and y-intercepts, horizontal asymptote, domain, limit behavior of vertical asymptote, and end behavior. Plot the graph.

1 $f(x) = \frac{x^2 - 4}{x^2 - 9}$

Points of discontinuity: _____

Holes: _____

x-intercept: _____

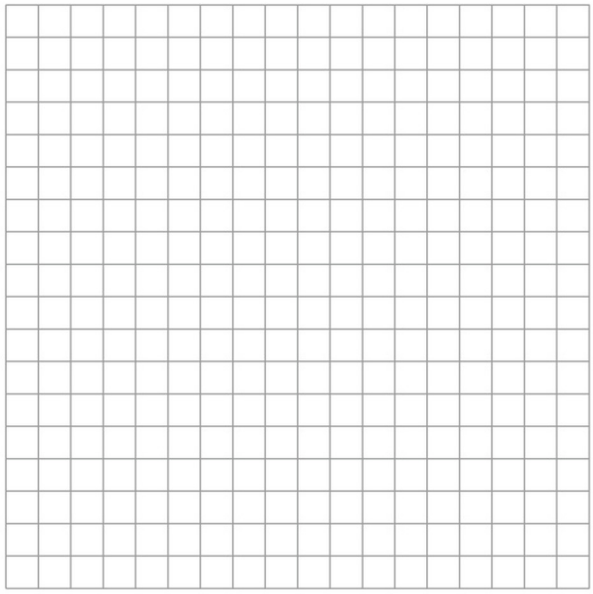
y-intercept: _____

Horizontal asym: _____

Domain: _____

Limit behavior of all vertical asym:

End behavior asym: _____



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

Points of discontinuity: _____

Holes: _____

x-intercept: _____

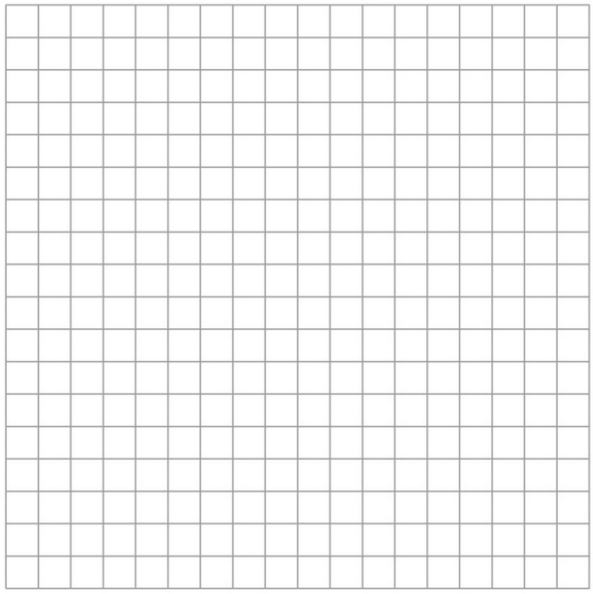
y-intercept: _____

Horizontal asym: _____

Domain: _____

Limit behavior of all vertical asym:

End behavior asym: _____



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Answers

1 $f(x) = \dfrac{x^2 - 4}{x^2 - 9}$

Points of discontinuity: 3, -3

Holes: None

x-intercept: 2, -2

y-intercept: $0, \dfrac{4}{9}$

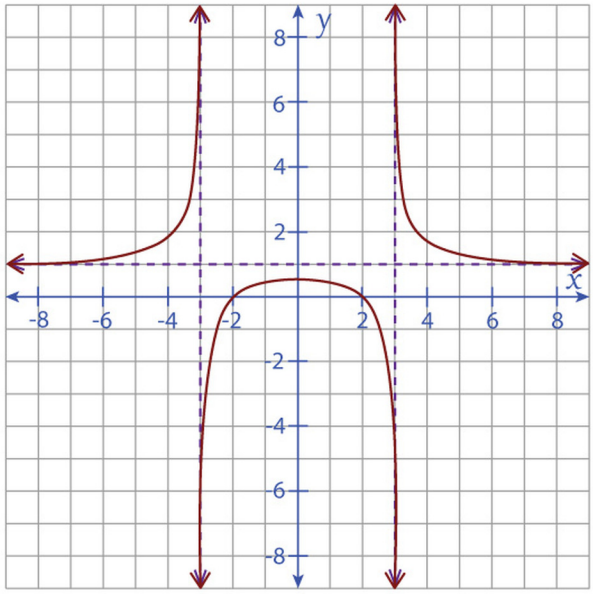
Horizontal asym: $y = 1$

Domain: All real except -3, 3

Limit behavior of all vertical asym: $\lim_{x \to -3^-} f(x) = \infty$, $\lim_{x \to -3^+} f(x) = -\infty$

$\lim_{x \to 3^-} f(x) = -\infty$, $\lim_{x \to 3^+} f(x) = \infty$

End behavior asym: $y = 1$



2 $f(x) = \dfrac{x^2 - x - 6}{x^2 - 2x - 8}$

Points of discontinuity: 4, -2

Holes: $x = -2, \dfrac{5}{6}$

x-intercept: 3

y-intercept: $\dfrac{3}{4}$

Horizontal asym: $y = 1$

Domain: All real except 4, -2

Limit behavior of all vertical asym: $\lim_{x \to 4^-} f(x) = -\infty$, $\lim_{x \to 4^+} f(x) = \infty$

End behavior asym: $y = 1$