Graphing Rational Functions

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

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

Points of discontinuity: _____

Holes: _____

x-intercepts: _____

Vertical asymptotes: _____

Horizontal asymptotes: _____

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

Points of discontinuity: _____
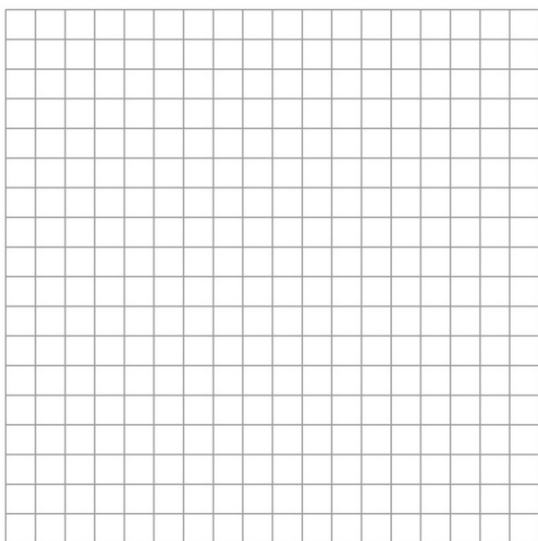
Holes: _____

x-intercepts: _____

Vertical asymptotes: _____

Horizontal asymptotes: _____

Identify the holes, vertical asymptotes, and horizontal asymptote. Then sketch the graph
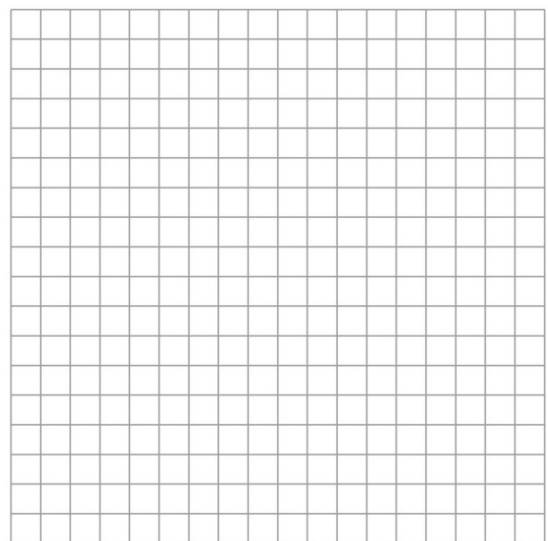
3 $f(x) = \dfrac{x}{-x - 2}$

Holes: _____

Vertical asymptotes: _____

Horizontal asymptotes: _____

4 $f(x) = \dfrac{2x - 6}{x^2 - 3x}$

Holes: _____

Vertical asymptotes: _____

Horizontal asymptotes: _____

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Answers

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

Points of discontinuity: 4

Holes: None

x-intercepts: 2

Vertical asymptotes: $x = 4$

Horizontal asymptotes: $y = 1$

2 $f(x) = \dfrac{x^2 + x - 6}{-4x^2 - 16x - 12}$
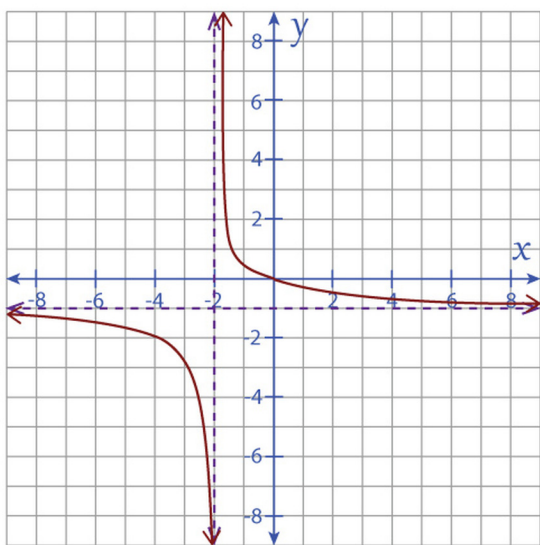
Points of discontinuity: -1, -3

Holes: $x = (-3, -\frac{5}{8})$

x-intercepts: 2

Vertical asymptotes: $x = -1$

Horizontal asymptotes: $y = -\frac{1}{4}$

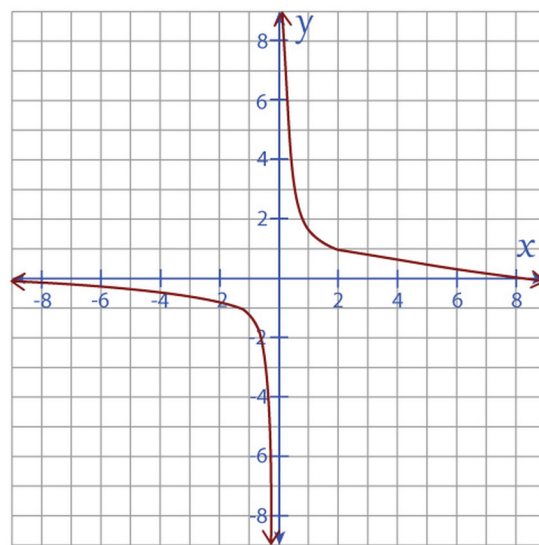**3** $f(x) = \dfrac{x}{-x-2}$

Holes: None

Vertical asymptotes: $x = -2$

Horizontal asymptotes: $y = -1$

4 $f(x) = \dfrac{2x-6}{x^2 - 3x}$

Holes: $x = 3, \frac{2}{3}$

Vertical asymptotes: $x = 0$

Horizontal asymptotes: $y = 0$