Precalc Name_____



# More rational function practice

**Identify the holes, vertical asymptotes, horizontal or oblique/slant asymptote, and domain of each. (The answer key won't give you the oblique asymptote, unfortunately.)**

1) $f(x) = \dfrac{x^2 - 9}{x^3 - 9x}$

2) $f(x) = \dfrac{x^2 + 3x - 4}{-x^2 - 2x + 8}$

3) $f(x) = \dfrac{x^2 - 1}{-3x}$

4) $f(x) = \dfrac{2x^2 - 2x - 24}{x^2 - 4x}$

5) $f(x) = \dfrac{x^3 - 4x^2 + 3x}{-4x^2 - 4x + 24}$

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

7) $f(x) = \dfrac{x + 3}{-4x^2 + 16}$

8) $f(x) = \dfrac{x - 3}{3x + 3}$

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

10) $f(x) = \dfrac{-x + 1}{x + 3}$

# Answers to More rational function practice

1) Vertical Asym.: $x = 0$
Holes: $x = -3$, $x = 3$
Horz. Asym.: $y = 0$
Domain: All reals except −3, 0, 3

2) Vertical Asym.: $x = 2$
Holes: $x = -4$
Horz. Asym.: $y = -1$
Domain: All reals except −4, 2

3) Vertical Asym.: $x = 0$
Holes: None
Horz. Asym.: None
Domain: All reals except 0

4) Vertical Asym.: $x = 0$
Holes: $x = 4$
Horz. Asym.: $y = 2$
Domain: All reals except 0, 4

5) Vertical Asym.: $x = 2$, $x = -3$
Holes: None
Horz. Asym.: None
Domain: All reals except −3, 2

6) Vertical Asym.: $x = -1$
Holes: None
Horz. Asym.: None
Domain: All reals except −1

7) Vertical Asym.: $x = 2$, $x = -2$
Holes: None
Horz. Asym.: $y = 0$
Domain: All reals except −2, 2

8) Vertical Asym.: $x = -1$
Holes: None
Horz. Asym.: $y = \frac{1}{3}$
Domain: All reals except −1

9) Vertical Asym.: $x = 1$
Holes: None
Horz. Asym.: $y = -\frac{1}{2}$
Domain: All reals except 1

10) Vertical Asym.: $x = -3$
Holes: None
Horz. Asym.: $y = -1$
Domain: All reals except −3