

# Asymptotes Worksheet - Answer Key

Find the vertical asymptotes for function in problems 1-5. Find the horizontal/slant/curvilinear asymptotes of functions in problems 6-10.

1.  $f(x) = \frac{1}{x+17}$

A vertical asymptote is located at  $x = -17$ .

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

A slant asymptote is at  $y = 3x - 9$ .

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

A vertical asymptote is at  $x = 1$ , hole at  $x = -3$ .

7.  $f(x) = \frac{2x^3}{x^2+1}$

A slant asymptote is at  $y = 2x$ .

3.  $f(x) = \frac{2x+1}{x^2-4}$

A vertical asymptote is at  $x = \pm 2$ .

8.  $f(x) = \frac{2x^2+1}{x^2+1}$

A horizontal asymptote is at  $y = 2$ .

4.  $f(x) = \frac{4x^2+4x+1}{6x^2+x-1}$

A vertical asymptote is at  $x = -\frac{1}{3}$ .

9.  $f(x) = \frac{-x^3+2x^2}{x+7}$

A curvilinear asymptote is at  $y = -x^3 + 23$ .

5.  $f(x) = \frac{5x-1}{25x^2+1}$

There are no vertical asymptotes.

10.  $f(x) = \frac{5x^6+4x^4}{2x^3-1}$

A curvilinear asymptote is at  $y = \frac{5x^3}{2} + 10x + \frac{5}{4}$ .

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