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 $x = -17$.

2. $f(x) = \frac{x^2-9}{x^2+2x-3}$
   A vertical asymptote is at $x = 1$, hole at $x = -3$.

3. $f(x) = \frac{2x+1}{x^2-4}$
   A vertical asymptote is at $x = \pm 2$.

4. $f(x) = \frac{4x^2+4x+1}{6x^2+x-1}$
   A vertical asymptote is at $x = -\frac{1}{3}$.

5. $f(x) = \frac{5x-1}{25x^2+1}$
   There are no vertical asymptotes.

6. $f(x) = \frac{3x^2-9}{x-3}$
   A slant asymptote is at $y = 3x - 9$.

7. $f(x) = \frac{2x^3}{x^2+1}$
   A slant asymptote is at $y = 2x$.

8. $f(x) = \frac{2x^2+1}{x^2+1}$
   A horizontal asymptote is at $y = 2$.

9. $f(x) = \frac{-x^3+2x^2}{x+7}$
   A curvilinear asymptote is at $y = -x^3 + 23$.

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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