

## 5-3 Asymptotes

Determine any horizontal, vertical, or slant asymptotes for each function. Also make a special note if the graph has a hole anywhere.  
If none exist, just write "none."

1.  $y = \frac{x}{x^2 - x - 12}$       H = \_\_\_\_\_      V = \_\_\_\_\_      S = \_\_\_\_\_

2.  $y = \frac{x+5}{x^2 + 3x + 2}$       H = \_\_\_\_\_      V = \_\_\_\_\_      S = \_\_\_\_\_

3.  $y = \frac{3x^2 + 4x - 2}{x}$       H = \_\_\_\_\_      V = \_\_\_\_\_      S = \_\_\_\_\_

4.  $y = \frac{x^2 + x - 6}{x - 2}$       H = \_\_\_\_\_      V = \_\_\_\_\_      S = \_\_\_\_\_

5.  $y = \frac{x^2 + 5x + 3}{x + 2}$       H = \_\_\_\_\_      V = \_\_\_\_\_      S = \_\_\_\_\_

6.  $y = \frac{x^2}{x - 6}$       H = \_\_\_\_\_      V = \_\_\_\_\_      S = \_\_\_\_\_

7.  $y = \frac{x}{x^2 - x - 12}$       H = \_\_\_\_\_      V = \_\_\_\_\_      S = \_\_\_\_\_