1. Which points are restricted from the domain of the function graphed below?

![Graph of a rational function]

2. Find the vertical asymptote(s) of the graph of \( f(x) = \frac{x^2 - 9}{(x + 3)(x - 1)} \).

   [A] \( x = 1, -3 \)  
   [B] \( x = 1 \)  
   [C] \( y = 1 \)  
   [D] \( y = 1, -1 \)

3. Find the vertical asymptote(s) of the graph of \( f(x) = \frac{x^2 - 4}{(x + 2)(x + 9)} \).

   [A] \( y = 1 \)  
   [B] \( y = 1, -1 \)  
   [C] \( x = -9, -2 \)  
   [D] \( x = -9 \)

4. Find the horizontal asymptote of the graph of \( f(x) = \frac{3}{x - 2} \).

   [A] \( x = 0 \)  
   [B] \( y = 3 \)  
   [C] \( x = 2 \)  
   [D] \( y = 0 \)

5. What are the asymptotes of the function \( y = -\frac{3}{(x + 1)} - 2 \)?

   [A] \( x = -1, y = -2 \)  
   [B] \( x = -1, y = -3 \)  
   [C] \( x = 1, y = 2 \)  
   [D] \( x = 1, y = -2 \)
6. Write the equations of the horizontal asymptote and vertical asymptote of the graph \( y = \frac{3x}{x+6} \).

7. Write the equations of the horizontal asymptote and vertical asymptote of the graph \( y = \frac{4x}{x-8} \).

8. Graph the function on your graphing calculator and find the asymptotes. \( f(x) = \frac{x^4}{x^2-4} \)

9. What are the discontinuities of the function \( y = \frac{(x-1)(x-2)(x+3)}{(x+1)(x-2)} \)? Classify them as asymptotes or removable discontinuities.

10. Compare the quantity in Column A with the quantity in Column B.  

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>the number of asymptotes of ( F(x) = \frac{x}{(x^2-9)} )</td>
<td>the number of asymptotes of ( G(x) = \frac{x^2-9}{x} )</td>
</tr>
</tbody>
</table>

[A] The quantity in Column A is greater.    [B] The quantity in Column B is greater.  
[C] The two quantities are equal.  
[D] The relationship cannot be determined on the basis of the information supplied.
[1] \( x = 3 \)

[2] B____

[3] D____

[4] D____


[6] \( y = 3; \ x = -6 \)

[7] \( y = 4; \ x = 8 \)

[8] \( x = 2 \) and \( x = -2 \) are vertical asymptotes.

[9] \( x = -1 \) is an asymptote and \( x = 2 \) is a removable discontinuity.

[10] A____