NAME:_____

1. When does a function approach a horizontal asymptote?

2. Describe how to sketch the graph of $y = \frac{k}{(x-b)} + c$ when you know the values of k, b, and c.

3. Write two rational functions whose graphs are identical except one has been shifted 3 units to the right of the other.

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4. Write two rational functions whose graphs are identical except one has been shifted 5 units to the left of the other.

5. Write an equation in the form $y = \frac{k}{(x-b)} + c$ that has a vertical asymptote to the left of $x = 1$ and a horizontal asymptote above $y = 1$.

6. Write a rational function that has vertical asymptotes at $x = -1$ and $x = 3$.

[1] Answers may vary. Sample: The dependent variable of a function approaches the horizontal asymptote when the independent variable is very large or very small.

[2] Answers may vary. Sample: Draw the asymptotes $x = b$ and $y = c$. Then find a few data points for the equation near the asymptotes.

[3] Answers may vary. Sample: $y = \frac{1}{x}$ and $y = \frac{1}{x-3}$

[4] Answers may vary. Sample: $y = \frac{1}{x}$ and $y = \frac{1}{x+5}$

[5] Answers may vary. Sample: $y = \frac{1}{(x+2)} + 3$

[6] Answers may vary. Sample: $y = \frac{4}{x^2 - 2x - 3}$