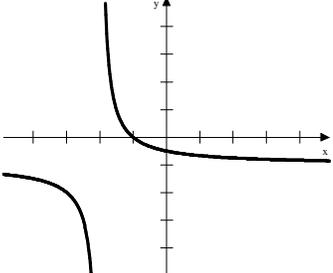
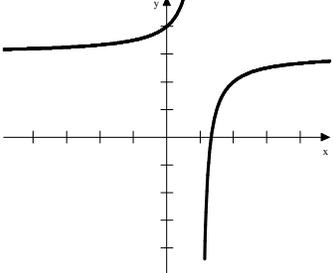


## 2.4 Corrective Assignment – Limits to Infinity

Name: \_\_\_\_\_

Pre-Calculus

For 1-2, use limit notation to represent the horizontal and vertical asymptotes. Then sketch them on the graph.

<p>1. </p> <p style="text-align: right;">Horizontal Asymptote:</p> <p style="text-align: right;">Vertical Asymptote:</p>	<p>2. </p> <p style="text-align: right;">Horizontal Asymptote:</p> <p style="text-align: right;">Vertical Asymptote:</p>
---	--

For 3-8, use a graphing calculator to find the horizontal asymptotes. Use limit notation to represent both the left and the right side end behavior.

$$3. f(x) = \frac{5-x}{2x-5}$$

$$4. f(x) = \frac{36.8x^2+2x-27}{8x^2-8x+1}$$

$$5. f(x) = \frac{3.5}{1+e^{-x}}$$

$$6. f(x) = \frac{15}{1+e^{-x}} + 3$$

$$7. f(x) = \frac{10+2x-15x^2}{5x^2+1}$$

$$8. f(x) = \frac{6}{1+e^{-x}} - 1$$

For 9-11, fill in the table and use that information to identify the vertical asymptote. Use limit notation to represent the behavior of the graph at the vertical asymptote.

$$9. f(x) = \frac{6x^2+39x-72}{2x^2+10x-48}$$

<b>x</b>				<b>3</b>			
<b>f(x)</b>							

$$10. f(x) = \frac{2x-1}{3x-1}$$

<b>x</b>				$\frac{1}{3}$			
<b>f(x)</b>							

$$11. f(x) = \frac{6x^2-x-2}{4x^2+36x+17}$$

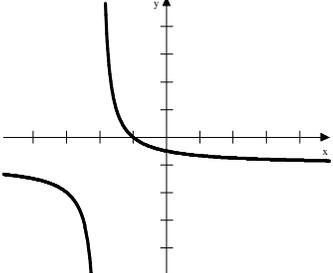
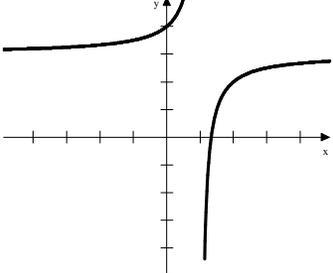
<b>x</b>				<b>-8.5</b>			
<b>f(x)</b>							

## 2.4 Corrective Assignment – Limits to Infinity

Name: \_\_\_\_\_ **Answer Key**

Pre-Calculus

For 1-2, use limit notation to represent the horizontal and vertical asymptotes. Then sketch them on the graph.

<p>1. </p> <p>Horizontal Asymptote:  <math>\lim_{x \rightarrow -\infty} f(x) = -1</math>  <math>\lim_{x \rightarrow \infty} f(x) = -1</math></p> <p>Vertical Asymptote:  <math>\lim_{x \rightarrow -2^-} f(x) = -\infty</math>  <math>\lim_{x \rightarrow -2^+} f(x) = \infty</math></p>	<p>2. </p> <p>Horizontal Asymptote:  <math>\lim_{x \rightarrow -\infty} f(x) = 3</math>  <math>\lim_{x \rightarrow \infty} f(x) = 3</math></p> <p>Vertical Asymptote:  <math>\lim_{x \rightarrow 1^-} f(x) = \infty</math>  <math>\lim_{x \rightarrow 1^+} f(x) = -\infty</math></p>
---	--

For 3-8, use a graphing calculator to find the horizontal asymptotes. Use limit notation to represent both the left and the right side end behavior.

3.  $f(x) = \frac{5-x}{2x-5}$

$\lim_{x \rightarrow -\infty} f(x) = -0.5$

$\lim_{x \rightarrow \infty} f(x) = -0.5$

4.  $f(x) = \frac{36.8x^2+2x-27}{8x^2-8x+1}$

$\lim_{x \rightarrow -\infty} f(x) = 4.6$

$\lim_{x \rightarrow \infty} f(x) = 4.6$

5.  $f(x) = \frac{3.5}{1+e^{-x}}$

$\lim_{x \rightarrow -\infty} f(x) = 0$

$\lim_{x \rightarrow \infty} f(x) = 3.5$

6.  $f(x) = \frac{15}{1+e^{-x}} + 3$

$\lim_{x \rightarrow -\infty} f(x) = 3$

$\lim_{x \rightarrow \infty} f(x) = 18$

7.  $f(x) = \frac{10+2x-15x^2}{5x^2+1}$

$\lim_{x \rightarrow -\infty} f(x) = -3$

$\lim_{x \rightarrow \infty} f(x) = -3$

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

$\lim_{x \rightarrow -\infty} f(x) = -1$

$\lim_{x \rightarrow \infty} f(x) = 5$

For 9-11, fill in the table and use that information to identify the vertical asymptote. Use limit notation to represent the behavior of the graph at the vertical asymptote.

9.  $f(x) = \frac{6x^2+39x-72}{2x^2+10x-48}$

<b>x</b>	2.9	2.99	2.999	3	3.001	3.01	3.1
<b>f(x)</b>	-42	-447	-4497	ERROR	4503	453	48

$\lim_{x \rightarrow 3^-} f(x) = -\infty$

$\lim_{x \rightarrow 3^+} f(x) = \infty$

Your answers in the tables may vary.

10.  $f(x) = \frac{2x-1}{3x-1}$

<b>x</b>	0	0.33	0.3333	$\frac{1}{3}$	0.334	0.34	0.5
<b>f(x)</b>	1	67	6667	ERROR	-333	-33	-1

$\lim_{x \rightarrow \frac{1}{3}^-} f(x) = \infty$

$\lim_{x \rightarrow \frac{1}{3}^+} f(x) = -\infty$

11.  $f(x) = \frac{6x^2-x-2}{4x^2+36x+17}$

<b>x</b>	-8.52	-8.51	-8.501	-8.5	-8.499	-8.49	-8.4
<b>f(x)</b>	689	1376.5	13751.5	ERROR	-13748	-1373.5	-136

$\lim_{x \rightarrow -8.5^-} f(x) = \infty$

$\lim_{x \rightarrow -8.5^+} f(x) = -\infty$