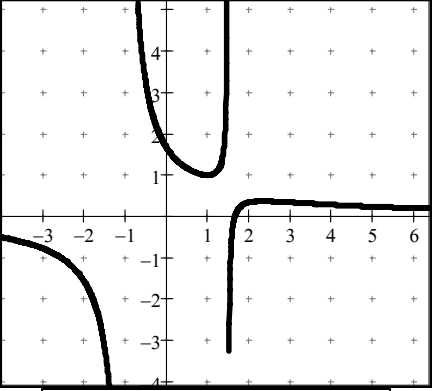
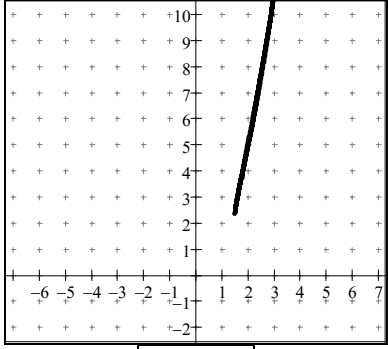


**Analysis Honors  
Review Worksheet  
Limits & Continuity Worksheet #5**

1)	1) $f(1)$ exists 2) $\lim_{x \rightarrow 1} (x+5)$ exists 3) $f(1) = \lim_{x \rightarrow 1} (x+5) = 6$ $\therefore f(x)$ continuous at $x = 1$	2)	1) $f(0)$ exists 2) $\lim_{x \rightarrow 0} (x^2 + 2x - 1)$ exists 3) $f(0) = \lim_{x \rightarrow 0} (x^2 + 2x - 1) = -1$ $\therefore f(x)$ continuous at $x = 0$
3)	1) $f(4)$ DNE $\therefore f(x)$ NOT continuous at $x = 4$	4)	1) $f(5)$ exists 2) $\lim_{x \rightarrow 5} \left( \frac{x^2 - 25}{x + 5} \right)$ exists 3) $f(5) = \lim_{x \rightarrow 5} \left( \frac{x^2 - 25}{x + 5} \right) = 0$ $\therefore f(x)$ continuous at $x = 5$
5)	1) $f(2)$ exists 2) $\lim_{x \rightarrow 2} [x]$ DNE $\therefore f(x)$ NOT continuous at $x = 2$	6)	1) $f(2)$ exists 2) $\lim_{x \rightarrow 2} \frac{ x+1 }{x}$ exists 3) $f(2) = \lim_{x \rightarrow 2} \frac{ x+1 }{x} = \frac{3}{2}$ $\therefore f(x)$ continuous at $x = \frac{3}{2}$
7)	1) $f(3)$ exists 2) $\lim_{x \rightarrow 3} \left( \frac{1}{x} \right)$ exists 3) $f(3) = \lim_{x \rightarrow 3} \frac{1}{x} = \frac{1}{3}$ $\therefore f(x)$ continuous at $x = \frac{1}{3}$	8)	1) $f(-3)$ DNE $\therefore f(x)$ NOT continuous at $x = -3$
9)	Continuous for all values of $x$ .	10)	Discontinuous at $x = 0$ . $f(0)$ DNE (Infinite Discontinuity)
11)	Discontinuous at $x = 1$ . $f(1)$ DNE (Point Discontinuity)	12)	Continuous for all values of $x$ .
13)	$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \frac{(x-2)(x+2)}{x-2} = 4$ So, let $\boxed{f(2) = 4}$	14)	$\lim_{x \rightarrow 2} \frac{x^2 - 5x + 6}{x - 2} = \frac{(x-2)(x-3)}{x-2} = -1$ So, let $\boxed{f(2) = -1}$

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<p>15) <math display="block">\lim_{x \rightarrow \sqrt{5}} \frac{x^2 - 5}{x - \sqrt{5}} = \frac{(x - \sqrt{5})(x + \sqrt{5})}{x - \sqrt{5}} = 2\sqrt{5}</math></p> <p>So, let <math>f(\sqrt{5}) = 2\sqrt{5}</math></p>	<p>16) <math display="block">\lim_{x \rightarrow -2} \frac{x^3 + 8}{x + 2} = \frac{(x + 2)(x^2 - 2x + 4)}{x + 2} = 12</math></p> <p>So, let <math>f(-2) = 12</math></p>
<p>17) </p> <p><math>(-\infty, -1), (-1, \frac{3}{2}), (\frac{3}{2}, \infty)</math></p>	<p>18) </p> <p><math>(\frac{3}{2}, \infty)</math></p>

10) 0	12) 0	14) $-\infty$	18) $\infty$	20) $-\infty$
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