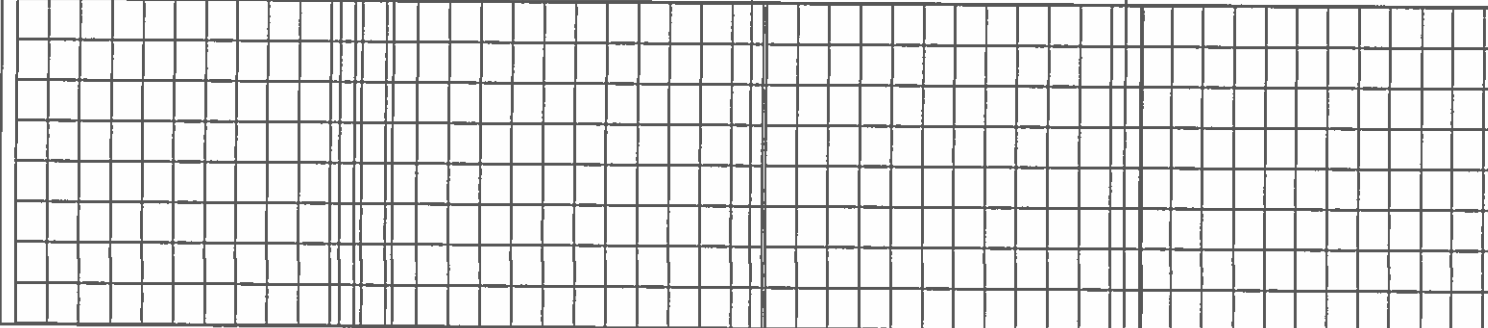


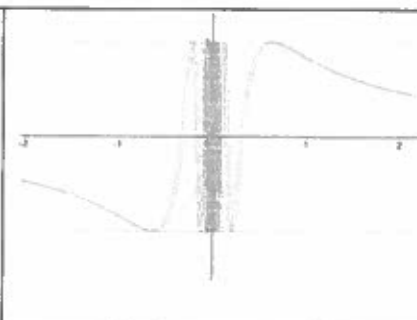
Limits and Continuity Test 1

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- [4] 1. Circle every function that has a point discontinuity. You do not need to graph the function but you may find graphing helpful.

$f(x) = \frac{\sin(x)}{x}$	$g(x) = \begin{cases} -(x+3)^2 + 2, & x \geq 0.5 \\ \frac{-9}{2}x - 8, & x < 0.5 \end{cases}$	$h(x) = \begin{cases} \frac{1}{2}x, & x > 4 \\ -x+5, & x \leq 4 \end{cases}$	$m(x) = \frac{2x^2 - 5x - 3}{x - 3}$
			

- [4] 2. Identify what type of discontinuity each function has and determine whether discontinuity is removable or not removable. If the function has no discontinuity, label it as continuous.

$y = \frac{x^2 - 3x - 40}{x^2 + 3x - 10}$	$f(x) = \frac{5}{x^3}$	$g(x) = [2x]$	

- [3] 3. What three conditions have to be met for a function $f(x)$ to be continuous at $x=c$?

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[20] 4. Evaluate each limit. If the limit does not exist, explain why.

a) $\lim_{x \rightarrow -\infty} \frac{-5x^5 - 7x^3 + 5x - 1}{4x^5 + x^4 - x + x^3} =$

b) $\lim_{x \rightarrow -\infty} \frac{-5|x|}{x} =$

c) $\lim_{x \rightarrow 3} -9 =$

d) $\lim_{x \rightarrow 0} \frac{9 - 9\cos(x)}{x} =$

e) $\lim_{x \rightarrow 0} \frac{3\sin(x)}{5x} =$

f) $\lim_{x \rightarrow -2} \frac{x^2 - 3x - 10}{x + 2} =$

g) $\lim_{x \rightarrow 8} \frac{x}{x - 8} =$

h) $\lim_{x \rightarrow 5} \frac{\sqrt{x+4} - 3}{x - 5} =$

i) $\lim_{x \rightarrow \frac{\pi}{4}} -\csc(4x) =$

j) Give the exact answer to:

$$\lim_{x \rightarrow \frac{\pi}{3}} \left(\frac{3}{14} + 7\tan(2x) \right) =$$