

A Puzzle by David Pleacher

Directions: Solve each of the following problems on limits and continuity:

			MATCHING	
_____	1.	To prove $\lim_{x \rightarrow 1} 3x + 2 = 5$, choose $\delta =$	A.	2
_____	2.	Test for Continuity at $x = 1$: $f(x) = \frac{x^3 - 1}{x - 1}$; $f(1) = 3$	C.	-2.5
_____	3.	$\lim_{x \rightarrow \infty} \frac{11}{x^2} =$	D.	0
_____	4.	$\lim_{x \rightarrow 1} 11 =$	E.	4
_____	5.	$\lim_{x \rightarrow 0} \frac{3}{x} =$	F.	$\frac{4}{5}$
_____	6.	$\lim_{x \rightarrow 7} \frac{x^2 - 49}{x - 7} =$	H.	36
_____	7.	Test for continuity at $x = 2$: $f(x) = \frac{x^2 - 4}{x - 2}$; $f(2) = 4$	I.	$\frac{1}{2}$
_____	8.	$\lim_{x \rightarrow 0} \frac{x^2 - 5x}{x^2 + 2x} =$	J.	CONTINUOUS @ $x=1$
_____	9.	$\lim_{x \rightarrow 1} (x + 1) =$	K.	NOT CONTINUOUS @ $X=1$
_____	10.	$\lim_{x \rightarrow \infty} \frac{5x - 8x^2}{3 + x^2} =$	L.	DOES NOT EXIST
_____	11.	$\lim_{x \rightarrow \infty} \frac{12x^3 - 7}{15x^3 - 2x} =$	M.	-8
_____	12.	$\lim_{x \rightarrow -3} \frac{x^2 + 2x - 3}{x^2 - 2x - 15} =$	N.	CONTINUOUS @ $X = 5$
_____	13.	To prove $\lim_{x \rightarrow 15} x - 7 = 8$, choose $\delta =$	O.	CONTINUOUS @ $X = 2$
_____	14.	$\lim_{x \rightarrow 4} \frac{x^2 - 4x}{x - 4} =$	P.	NOT CONTINUOUS @ $X = 5$
_____	15.	Test for continuity at $x = 2$: $f(x) = \frac{x^2}{x - 2}$	R.	NOT CONTINUOUS @ $X = 2$
_____	16.	Test for continuity at $x = 5$: $f(x) = \frac{3}{x - 1}$	S.	14
_____	17.	$\lim_{x \rightarrow 6} x^2 =$	T.	$\frac{12}{145}$

_____	18.	$\lim_{x \rightarrow 12} \frac{x}{x^2 + 1} =$	U.	11
			V.	ϵ
			W.	3ϵ
			Y.	$\frac{\epsilon}{3}$
			Z.	NONE OF THE ABOVE

1. Match each problem on the left (above) with an answer from the right-hand column.

2. Now write the corresponding letter to each problem in the spaces below.

_____	_____	_____		_____	_____	_____	_____	
7	5	3		10	9	18	17	
_____	_____	_____	_____	_____	_____	_____	_____	
18	14	9	8	17	14	15	6	
_____	_____	_____	_____	_____		_____	_____	_____;
16	14	13	14	15		3	12	14
_____	_____	_____	_____		_____	_____	_____	_____
18	17	14	1		2	4	6	18
_____	_____	_____	_____		_____	_____		
18	14	16	3		18	7		
_____	_____	_____	_____	_____	_____	_____	_____	_____
12	16	11	12	16	12	18	1	

Many thanks to Kathy Rivers for retyping this review sheet.