(Exes	cise 2.2)	Q (11-	50) Date	
"Calculat	ing links	using l	igit laws 1 10	
(n) = 3x+4	nin) = 4-x	g(x) = 3x,	7) f(x) = x+1,	
Q. Find the clinits,	in Questions	11 - 22 .		
11) limit $(2x+5)$ $S_{\varphi}^{0}, \qquad 0.5$		+5x-2)	13) lint 8 (t-5) [t-7	
Sol, Pulling value of x	Syl. Ruttig vale	ue of x	Sof, Putig value of t.	60,
= 2(-7) +5	2-(2) ² +5(2)		= 8(6-5)(6-7)	
2 -14+5	(1==-4+10-2	1	= 8(1)(-1)	(
= [-9].	48 4 4		x8 = [-8]	=
14) limit $(x^3 - 2x^2 + 4)$	$(x+8)$ 15) limit $x \rightarrow 2$	x+3 x+6	16) limit 3s(25-1)	
- 1 - militiga value of su			Putij values.	
$= \chi^3 - 2u^2 + 4u + 8$	72.+	3	23(之)(2(六)-1)	
$=(-2)^3-2(-2)^2+4(-2)+$			1+32 (4-3)	
= -8-8/-8/-8+8	27	F6	1 200	6
= [-16]	11.87	3	T = (x) Y	
17) limit 3(2x-1)2	18) lim y+2,	19)	lim (5-y)4/3	
Fot Putty values	Putty volues.	1	Putty values.	
2 3(2(-1) -1)2	= 2+2 (2)2+6	X - g	= (5-(-3))4/3	
= 3(-3)2	2 4		= (8) 4/3	
= 3(9)	4 + 10 + 6		≈[16].	
= [27]	20	1	Note (813)4 => 24 = [16]	
	= 5		11 11	

			Date
	20) lim (22-8) 3	21) lim + 3 10.	22) lim . V5h+4 - 2:55
	Patty limit	Puty limit	Using Rationalization
	(2(0)-8)/3	3 √3h+1 +1	15h+4-2 x 15h+4+2
•	(-8)3	3	$(15h+4)^{2}-(2)^{2}$
	[-2]	V3(0)+1+1.	h (15h+4+2)
77	1 2-c-K	3	= 5W+A-4
	limits of Quolients.		K(154+4+2)
1	in duestion 23- 23) lim x-5		= 594 8.0
0	Sof, x >5 x-25	$\frac{24) \lim_{x \to 3} \frac{\chi + 3}{\chi^2 + 4\chi + 3}}{52}$	15h+4 +2
0	Lim 71-5	$\frac{x+3}{x^2+3x+x+3}$	Applying limit
C	lin (25)	x+3	. = 15(0)+4+2
0	x->5 (x,5) (x+5)	(x+1)(n+3)	2000 2000 2000
0	$\lim_{x \to 5} \frac{1}{x + 5}$	lin 1/2+1	20 1 10 10 10
(Applying linit		26) Circle $x^2-7x+10$ $x \rightarrow 2 \qquad x-2$
	$\frac{1}{\zeta_1\zeta} \rightarrow \begin{bmatrix} 1\\10 \end{bmatrix}$	3+1 4	$=\frac{\chi^2-5\chi-2\chi+10}{\chi-2}$
0	25) $\lim_{x \to +3x - 10}$	(xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	$(x_6)^2 = \frac{x(x-5)-2(x-805)}{x-2}$
-	x→-s x+5	(x *5) 000	1x-211x 5)
0	$\lim_{x \to -5} \frac{x^2 + 3x - 10}{x + 5}$	lin (x-2)	Curs and (18
P	$\chi^2 + 5x - 2x - 10$	Applying einit	lint (x-5) x+2 Applying lint.
5	2+5	-5-2 = [-10]	Applying lint. 2-5 ⇒ [-3].
٤	$\frac{\chi(x+5)-\lambda(x+5)}{(x+5)}$		
Spirit Spirit		1	

Salar Sa		
27) lant 12/2+tin2 (1)	28) lin +2+3t+2/10	29) 4in -2n-4.
50 t2+t-2	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	8/2 (-x-2)
t2-1	t2-t-2	$\chi(\chi+2)$
$=\frac{t^2+2t-t-2}{(t)^2-(1)^2}$	= t+2t+t+2	-2 (x+2) x2 (x+2)
	t-2t+t-2	1. 2
= (t-1)(t+2)	$= \frac{t(t+2)+1(t+2)}{t(t-2)+1(t-2)}$	x -> -2 x2
(+1)(+1)	(t+1)(t+2) 117.	Applying finit
$\begin{array}{ccc} & & & & \\ & & \\ & & & \\ & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & & \\ & &$	(+32) (++1) 1.	741
Applying Limit	14) x 3 x 4 4 x 1 3 x 1	7. x 3 - 2
$\frac{1+2}{1+1} \Rightarrow \boxed{\frac{3}{2}}$	lit <u>t+2</u> t→-1 t-2	33) lim 4-1
30) fin 5y 3 + 8y 2	Applying limit	u→1 u³-1
$R \rightarrow 0 \frac{0}{3y^4 - 16y^2}$	-1+2 = 1	$-\frac{u^4-1}{u^3-1}$
y (5y+8) + ++++	-1-2 3	$= (u^{2})^{2} - (1)^{2}$ $= (u)^{3} - (1)^{3}$
y (3 y = 16)	-1 Applying Civit	200
Applying lint	$-\frac{1}{2} = \widehat{I}$	$3^{3}-b^{3}=(4-b)(4^{2}+ab+b^{2})$
$\frac{5(0) + 8}{3(0)^2 - 16} = \begin{bmatrix} -1 \\ 2 \end{bmatrix}$	$\lim_{\chi \to 0} \frac{\frac{1}{\chi-1} + \frac{1}{\chi+1}}{\chi}$	(u-1)(u2+1)
	Sof	(y/1)(u+1)(u2+1)
31) him $\frac{1}{x-1}$ $x \to 1 \frac{1}{x-1}$ $\frac{3cl}{2c-1}$	(x+1) + (x-1) (x-1)(x+1)	(u-1)(u2+u+1)
$\frac{2}{2} \frac{1}{2} \frac{1}{2} \rightarrow \frac{1-2}{2}$	$= \frac{1}{x \to 0} \left(\frac{2x}{(x-1)(x+1)} \cdot \frac{1}{x} \right)$	$\frac{(u+1)(u^2+1)}{(u^2+u+1)}$
1-X 1-1	Applying lint	Applying limit. $(2)(2) \Rightarrow 4$ $(2)(2) \Rightarrow 3$
$\frac{1-x}{x^2-x} \Rightarrow \frac{-(x-1)}{x(x-1)}$	$\frac{2}{2^{2}+2^{2}-1}=\frac{2}{(0)^{2}-1}$	= (-2) 3 - (3)

3			
-0	34) Limit V3-8	35) Lint 11/2 (+13	36) timit 41x - 12 (1) 8
-	34) limit $\frac{\sqrt{3}-8}{\sqrt{4}-16}$ 5	· × × - 9	200 1 200 1 200 1 1 1 1 1 1 1 1 1 1 1 1
	50). V3-8	Sd 3	50.
-	v4-16	1x-3 1x+3	4x-x2 2+ 1x
	V - 16	$\frac{\sum_{x=3}^{5} \sum_{x+3} \sum_{x+3}}{x-9} \times \frac{\sum_{x+3}^{5}}{\sum_{x+3}^{5}}$	2-FR 2+FR
	$=\frac{(V)^3-(2)^3}{2^2+(1)^2}$	- (Fc) - (3)2	$(4x-x^2)(2+Tx)$
)	$(V^2)^2 - (4)^2$	(x-9)(Tx+3)	(2)2-(Fx)x
	$(v-2)(v^2+2v+4)$	1 29	n(4-x)(2+1x)
f	(v2-4) (v2+4)	[x-9) (Tx+3)	14-x7
The second	(V-2) (V2+2V+4)	1 (b+	Applying limit
0	(V-2)(V+2)(V+4)	Tx+3	x (2+1x)
0	Applying limit	Applying limit	4(2+14)
0	$\frac{(2)^2 + 2(2) + 4}{(2+2)((2)^2 + 4)}$	19+3	4(2+2)
0	1+4+4 12 1	$=\frac{1}{3+3}$ $\Rightarrow \boxed{\frac{1}{6}}$	4(4) = [16].
•	$\frac{4+4+4}{(4)(8)} \Rightarrow \frac{12}{32}$	3 3+3. = 6	(2,12)
	37) limit $x-1$ $x \rightarrow 1$ $\sqrt{x+3} - 2$	Applying limit	$(\sqrt{\chi^2+8})^2 - (3)^2$
130	Sel: x-1 x 1x+3 + 2	$\sqrt{\chi+3}+2$	$(x+1)(\sqrt{x^2+8}+3)$
-		41) 44- 5- 4-1/2-	$x^2 + 8 - 9$
-		E+x 4+2	(x+1)(1x+8+3)
	$= (x-1)(\sqrt{x+3}+2)$	2+2	$\frac{\chi^2-1}{(\chi+1)(1-2)^2}$
	(Vx+3)2-(2)2	4	(x+1) (\x2+8+3)
	= (x-1)(\(\nu\)x+3+2)	38) wint \(\sigma^2 + 8 - 3\) \(\chi \rightarrow - 1\) \(\chi \rightarrow 1 \)	(x-1)
	2+3-4	Sel.	Applying limit
-	= (x-1)(1x+3+2)	x2+8-3 x 1x2+8+3	$\frac{-2}{6}$ \Rightarrow $\left[-\frac{1}{3}\right]$.
1	00-17	111 4872	3)

39) Birth 12-4	40) Line 11/24 2 8-84 State (48)
x+12. x-2	Sd. 4x43
$\sqrt{x^2+12}-4$	x+2 [x+5+3
x-2	$\frac{x+2}{\sqrt{x^2+5}-3} \times \frac{\sqrt{x^2+5}+3}{\sqrt{x^2+5}+3}$
1x2+12-4 x 1x2+12+4	TO THE WAY
x-2 x \(\frac{12+4}{12+4}\)	$(2+2)(\sqrt{x^2+5}+3)$
$(\sqrt{\chi^2+12})^2-(4)^2$	(Vz+5)2-(3)2
(x-2)(\sqrt{x2+12+4})	$(x+2)(\sqrt{x^2+5}+3)$
$\chi^2 + 12 - 16$	x2+5-9
(x-2)(\Jx+12+4)	$= (\chi + 2)(\sqrt{\chi^2 + 5} + 3)$
$= (\chi^2 - 4)$	χ^2-4
$(x-2)(\sqrt{x^2+12}+4)$	$= (\sqrt{x+5}+3)(x+2)$
= (2/2)(2+2)	(x-2) (x+2)
(XXX)(VX712+4)	$=\sqrt{\chi^{2}+5}+3$
= (x+2)	Applying livit
(TX2+12+4)	They by her se
Applying limit	3+3 = 3 1 1 1 1 1 1 1 1 1
arro di di	-4 -4 2
2+2	1 2 4 5 V 1 C 1 C 1 C 1 C 1 C 1 C 1 C 1 C 1 C 1
$(\sqrt{(2)^2+12}+4)$	41) lin 2-\x2-5
4	cd x+3
7 7 5	Sol 2- 1/2-5 2+ 1/2-5 (2)2-1/2-5)2
8	- X - X - X
(NEW 289 N. 1.1.7.7.7.7.)	$\frac{32!}{2-\sqrt{x^2-5}} = \frac{2+\sqrt{x^2-5}}{2+\sqrt{x^2-5}} = \frac{(2)^2-(\sqrt{x^2-5})^2}{(x+3)(2+\sqrt{x^2-5})}$
1 ~21.6 _~21.6	
4-14	(2+ (2) 3-x = Applying limit
$(x+3)(2+ x^2-5)$ (x+3)	t+x 1-c2+1x-3
2+14 => =	6 3 6 3 3

	42) lim 4-x 2-34 5- \(\sigma^2+9\)	Limits with	trigonome	tric Functions. Find
	2345- 1-2:8	the limits	in Qu	restion 43-50.
	Sol. 4-x	43) lin (25inx		44) lim sin2x
	5-122+9	Puting values		Pottig value
	4-x x 5+Vx2+9	2 sin(0) -1 :. s	sin0 = 0	(Sin 0)2 => 02 => 00.
0	5-1x2+9 5+1x2+9	2(0)-1 ⇒ -1		46) lim Tank x+0
	$(4-x)(5+\sqrt{x^2+9})$	45) lim secx.	•	lin Sinx > helip X >0 Cosn > values.
	$(5)^{2} - (\sqrt{\chi^{2} + 9})^{2}$	lin 1 n >0 Cosn		$\frac{\sin 0}{\cos 0} = \frac{0}{1} \Rightarrow \boxed{0}$
	(4-x) (5+ Jx2+9)	Puttig value		47) lim 1+x+sinx
	25-x2-9	$= \frac{1}{\cos 0} : \cos 0$	=1	Puttig value:
D	(4-x)(5+ (x2+9)	= 1		$1+0+\sin\theta$
	(4-x)(4+x)	48) lim (x2-1) (2	2-cosx)	3650 1+0+0 - 1.
9	5+ 1x2+9	Ratif values		3(1)
	(4+x)		÷ (-1)(2-1) => (-1)(1) => -1).
9	Applying limit	49) lin Jx+4		
3	5+1(4)2+9	lim X+4 lim		
0	4+4	X ラード X ラー	-1	
-	$\frac{10}{8} \Rightarrow \begin{bmatrix} 5\\4 \end{bmatrix}$	(1-x+4) (cos(-)	x+x) =	14-1 Ans.
		50)	1 17+	-(I) ^L
	x → 0 17 + sec²n	7+ lim (sec2x)	18	
-	V lim (7+sec2n)	7+(seco)2	[21	THE END
	n-70			