| Exercise 2.4 | (21-42) | Date |
|--|--|--|
| " One Side | d limits and limits | at infinity". |
| Q. Find The line | ts in Question (21 | - 42) ? |
| 2) lim sin TOO | 22) lim sinkt | 23) lim sin 3y |
| Sol: 0-70 \[\sqrt{2} 0 | Sol (K constant) | 5d. 4y |
| lim sin 120 | lim' sinkt | lim sin 34 |
| in sind | t Multiplying & Dividing | Multiply & Divide |
| $ \begin{array}{ccc} \vdots & \lim & \sin \theta \\ \theta \to 0 & \overline{\theta} & = 1 \end{array} $ | by K. | by 3. |
| lim sin 120 =1 | tim sinkt x K | lim sin 34 x 3/3 |
| 0-0 120 | T K | |
| $\frac{24) \lim_{h \to 0} \frac{h}{\sin 3h}$ | K. (lim sinkt) | 3 (lim sin3y) |
| Sd. lim h | K·1 ⇒ K | $\frac{3}{4}(1) \Rightarrow \boxed{3}$ |
| h→0° sin 3h | | 4 |
| Multiply & Divide by 3. | 25) lim tan 2x | 26) lim 2t tro tant |
| $\lim_{h\to 0^+} \frac{h}{\sin 3h} \times \frac{3}{3}$ | | lim 2t cost to sint |
| 1 (lim 3h) | lim sin2x x+0 x cos2x | (2 lim cost) (lim t) |
| 4 | (lim sin 2x) lim 1 x+0 x (x+0 cos2x) | 2(1)(1) >2 |
| $\frac{1}{3}\left(\lim_{h\to 0^{-}}\frac{1}{\sin 3h}\right)$ | 2 (lim sin 2x) (lim 1 x20 cos26 | 1 |
| 1/3 (1/) | $\frac{2(1)(1)}{2x} = \frac{2(1)(1)}{2}$ | 9/ |
| | | |
| <u> </u> 3]. | | |
| | | (|

| 1 | # 01 (8-32-42)= | NAMENT. | Strain Assistance |
|-----|--|--------------------------|---|
| | 27) lim zcsc 2x | 28) Lim | 6x2 (cot x) (csc2x) |
| 1 | Sol, whom - it | t+0 Sal) (18 | 30 Sim 1-cost |
| 10 | lim resezz refinit | Sat in tro | 6x2 (cotx) (csc2x) |
| 5 | $\therefore \cos 2n = 1$ | : cot | $x = \frac{\cos x}{\sin x}$, $\csc 2x = \frac{1}{\sin 2x}$ |
| | Son Sinza ME Sinza | 80. | 3//1 |
| | lim X x+0 sin2k (cossk) | 3 (lir | $\frac{2x \cdot x \cdot \frac{\cos x}{\sin x}}{\sin x}$ |
| | | 3/ | lim x //lim 2x //lim 100 |
| | (lim x x + o Sin2x) (lim 1 x + o cossu) | (E) 05 x | $\lim_{t \to 0} \frac{x}{\sin x} \left(\lim_{t \to 0} \frac{2x}{\sin 2x} \right) \left(\lim_{t \to 0} \cos x \right)$ |
| | 1/01 2× 1/0 | 3 (| lim 1 too sinx (too sin2x) (lim cosx) |
| | $\frac{1}{2}\left(\lim_{x\to 0}\frac{2x}{\sin 2x}\right)\left(\lim_{x\to 0}\frac{1}{\cos 5x}\right)$ | MEPIE | 3(1)(1)(1) \(\Rightarrow\) [3]. |
| | - (1)(1)(\$0年) /m | 30) Lin | $x^2 - x + sinx$ |
| | र्व उट्टू र | Sof lim | 22 |
| 8 | 29) lim x + x cosx x > 0 Sinx cosx | 141) X-70 | an |
| | Sol, lim x + x cosú x70 sinxcosu sinx cosú | lim x-> | $3\frac{x^2}{2x} + \frac{\sin x}{2x} - \frac{x}{2x}$ |
| | 270 sinucosu sinucosu | (Q' | $\frac{m}{70}$ $\frac{\chi}{2}$ + 1/lim $\frac{\sin \chi}{\chi}$ + $\frac{\lim_{x\to 0} \frac{1}{2}}{\chi}$ |
| | (lim x) (lim 1) + (lim x+0 cosx) + (x+0 | $\frac{\chi}{\sin \chi}$ | 2/2(1.40 X) (1.40 -/ |
| - 1 | / lim / \/ / / / / / / / / / / / / / / / / / | | 1 (lim x) + 1 (lim sinx) -1 2 (x70) 2 (x70 x) 2 |
| | (lim 1) (lim 1) + (lin x+0 cosn) + (x+ | o sinx | (000) |
| | (1)(1) +1 = 2 | | 0+1/-1/ = 0 |
| | | | (5,(6) |
| G. | | | |

| 6x2 (cot x) (csc2x) | 28) Lim | 27) km Zese 2k |
|--|--------------------------------|---|
| 21) lim 1-cos0 | 32) lim | X - XCOSK |
| 85, Sin 20 | 2-70 (d) | Sin 2 3K |
| lim 1-coso | lim x-70 | X-XWSK |
| 0-10 Sin20 | No. | sin23k |
| lim 1-cost | lim x->0 | $\frac{\chi(1-\cos\kappa)}{\sin^2 3\kappa} \Rightarrow \lim_{\chi \to 0} \frac{\chi(1-\cos\kappa)}{(\sin 3\kappa)(\sin 3\kappa)}$ |
| Mullion & Divide | 2.0 | sin 2 3 k (sin 3x) (sin 3x) |
| Multiply & Divide by 1+cos0. | lim (1/3 | $\left(\frac{3\kappa}{\sin 3\kappa}\right)\left(\frac{1-\cos \kappa}{\kappa}\right)\left(\frac{3\kappa}{\sin 3\kappa}\right)\left(\frac{1}{3\kappa}\right)$ |
| lim 1-cost x 1+cost 1+cost | \ε, | (3m3x/ (3m3x/ (3) |
| 2 2 2 sin Ocoso 1 + coso | (1/2)(| 1)(0)(1)(1/3) = 101. |
| $\lim_{\Omega \to 0} 1 - \cos^2 \theta$ | | X X > 0 Sin 2x \ Share Ussel |
| 0+0 (2 sindeos D) (1+ cos D) | 33) Tim | sin (1-cost) (1) (1) |
| $\therefore 1 - \cos^2\theta = \sin^2\theta$ | 题; | 1 - cost |
| lim sin*0 | lir t- | 29) lim x+ x(465-1) ins n |
| $\theta \rightarrow 0$ $(2sig\theta \cos \theta)(1+\cos \theta)$ | 1018 04.8 | 1 - cost 200 - 1 |
| lim sind | mis y | |
| $(2\cos\theta)(1+\cos\theta)$ | So, hes | on white the walk to some |
| Applying limit | So, | lim sûn (1-cost) |
| lim sin0° | \$ \(\langle \frac{1}{800} \) | t+0 1-cost |
| (deos) (1+cos) | 21 | TELM. 1+ MILLS |

| | Date | | |
|--|---|--|--|
| 34) lim siù (sinh) | iniss) lim sina | 36) slim sisin Sre | |
| Soli Octions Office | 50, Sin 20 | 36) Lim isin Sk | |
| lim sin(sinh) | lim sin 0 | lim sinsx x 4x x \$\frac{4x}{x=0} \times \frac{\sin4x}{\sin4x} \times \frac{5x}{\sin4x} \times \frac{4x}{\sin4x} \times \frac{x}{\sin4x} | |
| (Sinh) | 9-70 Sin 20 Multiply & Divide by | 30 70 30 | |
| $\lim_{N\to 0} \frac{\sin \theta}{\Omega} = 1$ | 20. | 5 (lim sin Sn) (lim 420 sice | |
| as $0 = sinh$. | $\lim_{0.70} \frac{\sin 0}{\sin 20} \times \frac{20}{20}$ | | |
| 80, | A 1/2 8. 2017 | 3 (1)(1) | |
| $\lim_{h \to 0} \frac{\sin(\sinh)}{\sinh} = \boxed{1}$ | 1 (lim sind) (lin 0) | $\frac{20}{50}$ $\frac{20}{\sin 20}$ | |
| Sinh | $\frac{1}{2}(1)(1) = \boxed{1}{2}$ | · (2 \ (1)(1) | |
| 37) lim Acas A | | 40) lim sin 3y cotsy | |
| 37) lim dess d 0-0 Putting value | 39) lim tan 3x 301 sin 8x | 40) lim sin 3y cotsy y >0 y cot4y | |
| lim Ocos O | lim tan3x x >0 sin 8x | Lim sin 3y cos Sy sin 4y y 70 y sin 5y cos 4y | |
| 0-70 | lim sin 3 k | / lim sin3y / lim cossy \ | |
| lim (0) (cos 0°) | | " " | |
| (0)(1) = 0 | N-70 COS 3N SinBN 3 | u × 3 (lim sin4y) y >0 sin5y) | |
| 38) lim sin 8 cot 28 | 3 (lim sin3h) (lim | Sin8n (lim 1/20 cos 3n) | |
| Sol, | 3(1)(1)(1) | 4(1)(1)(1) | |
| $\lim_{0 \to 0} \sin \left(\frac{\cos 2\theta}{\sin 2\theta} \right)$ | 8 1/(/ | 5(1)(1) | |
| | $\left[\frac{3}{8}\right]$ | Answer. | |
| Um sind cos 20 0 -> 0 Isind cos 0 | | multiply & Divide by | |
| $\lim_{\theta \to 0} \frac{\cos 2(\delta)}{2\cos(\delta)} = 7 \frac{1}{2}$ | -1 4. | | |
| 0 20 2 (0) 2/ 2 | | | |
| | 1 | | |

| | | | Date . | | |
|--|--------------------|---------------------|---|------------|---|
| 41) ritim mitario | ने लंद क्ले | dim | Ocat 4 Oin | 34) lin | C |
| Sol Oso Ozot 30 | Scrit Sins | D->0 | sin20 doh? 2 | 10 04·N | |
| The state of the s | lim 0->0 | De0+48 |) (dms) | ris mil | |
| lim tand 0-0 02 sot 30 | 0.0 | Sin ² Oc | ot 20 | 2) | |
| Lim sind sin30 | lim 0-10 | Deos | 40 sin 20 | al : | - |
| 0-0 02 cos O cos 30 | gine mil | | cos 20 sin 40 | | 6 |
| (lim sind) (lim sin 30) (lim sin 30) (lim sin 30) | m .3 cost cos 30 | R | in Ocos40(2. | sindcoso) | 6 |
| 0 70 30 / 0 | 70 cost cos 30 | | sin 20 cos 20 | sin 40 | 6 |
| $(1)(1)(\frac{3}{1\cdot 1}) \Rightarrow [$ | 3) (11(1) - | lim 0-70 | Dc05 40(45) | | = |
| | f: -12v | , ; | sin 20 tos | | • |
| 40) lim sin3y cotsy yestey | lim tun 3x | lin | | mil (FE | - |
| 1 Paralycian in the | 827 m | 0->0 | cos220s | 100111 | 6 |
| | 15.63 | lin | (40) (cos | 40 cos20 1 | |
| | | 0-70 | | 03 20 | 6 |
| | the second | : ii | Applying lin | int | |
| - | 1 / | (1 | $\left(\frac{1\cdot 1^{2}}{12\cdot 1^{2}}\right)$ | = [1] | |
| the state of the s | 1 7 50 1 | 13 | sin 8 cot 28 | 38) lim | 0 |
| () () () () () | (())(() | \longrightarrow | | 6-70 | 6 |
| | 5 | | (25:00) (188 | | 6 |
| · Property State | | | 2 | 043 | - |
| to, a gri - hallman was | () | | De 17 Baille | 16-B | 6 |
| The figure of section | 42 | - | (615-6) | mil | - |
| | • 3 | | Colors | 07-1) 63 | |
| | | 1 | | | 1 |