An 29° Let x and y be the decision variables unrese,  
x supresents the packets of Screw A and  
y sepretents the packets of Screw B.  

$$Z = 70x + 100y$$
 (to be maximised)  
Subject to constraints,  
 $4x + 6y \leq 240$   
 $6x + 3y \leq 240$   
 $6x + 3y \leq 240$   
 $x \geq 0$ ,  $y \geq 0$  (non-negative constraints)  
Converting above inequalities wite equalities,  
 $4x + 6y = 240$   
 $x \geq 0$ ,  $y \geq 0$  (non-negative constraints)  
Converting above inequalities wite equalities,  
 $4x + 6y = 240$   
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Converting above inequalities wite equalities,  
 $4x + 6y = 240$   
 $x \geq 0$ ,  $y \geq 0$  (non-negative constraints)  
Converting above inequalities and  $y = 240$   
 $x \geq 0$  for  $\frac{1}{2} \sqrt{9} \sqrt{9}$   
 $x = 0$  and  $y = 0$  (non-negative constraints)  
 $x = 0$  and  $y = 0$  (non-negative constraints)  
Convider so start point (0,0)  
 $2x + 3y \leq 120$   
 $0 \leq$ 

Connex points  $x = 760 \times +100 \text{ y}$ Q (Q, 0) = Q + Q = Q + Q A (0,40) = 4200 - maximum value. B (30,20) X=70(30)+100(20)= 3800 R = 40(40)+100(0) = 2400 C (40,0) The factor owner must produce Oparkett of Screw A sand 40 parkett If screw B to maximuse his profit. Lisaph His maximum profit = 4000 pails or Rt 40 x= 70x+1004 County points 0 (0,0) Z = 0+0 =0 A (0,40) Z= 70(0) +100 (40) = 4000 Z = 70 (30) + 100 (20) = 4100 → max mun value B (30,20) C(40,0) Z = 70(40) + 100(0) = 2800(D.O. tring that Do minut 10.0) The faitby course must produce 30 packets of screw A land 20 parkets of screw B to maximile his profit. they maximum projet = 4100 parts of Ar.41 ALLED to divide

$$MU = \frac{1}{2} = \frac{1}{2} + \frac{1}{2} = \frac{1}{2} = \frac{1}{2} + \frac{1}{2} = \frac{1}{2} = \frac{1}{2} + \frac{1}{2} = \frac{1}{2} = \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{1}{2} = \frac{1}{2} + \frac{1}{2} +$$

6 Distance of the point Q (-1, -5, -10) from P(2, -1,2) Distances on some in athenast  $d = \sqrt{(x_{a} - x_{1})^{2} + (y_{2} - y_{1})^{2} + (x_{2} - x_{1})^{2}}$  $d = \sqrt{(2+1)^2 + (-1+5)^2 + (2+10)^2}$  $d = \sqrt{9 + 16 + 144}$  $d = \sqrt{169}$ d = 13 units Any 18 11/4 Ani27º sing + cord dx 16+9 sim 2x Va. Services 10 Million All Rut  $\sin x - \cos x = t$  $(\cos x + \sin x) dx = dt$ Also  $(sinx - (blx)^2 = t^2$  $unn^2 x + con^2 x - a sin x con x = t^2$ 1 - Sin ax = t2  $\sin ax = 1 - t^2$ unity, when,  $\chi = 0$ , t = -1x= 11/4, t=0

dt  $J_{-1} = 16 + 9(1 - t^2)$ dt  $16+9-9\pm^{2}$  $\int_{4}^{0} \frac{dt}{25 - 9t^{2}}$  $\int_{-1}^{0} \frac{dt}{-9(t^2-25/q)}$  $= -\frac{1}{q} \int_{-1}^{0} \frac{dt}{t^2 - (5/3)^2}$  $= -\frac{1}{9} \left[ \frac{1}{2 \times \frac{5}{5}} \log \left| \frac{t-5/3}{t+5/3} \right| \right]_{1}^{0}$ - 03.M  $= -\frac{1}{9} \left[ \frac{3}{10} \log \left| \frac{34-5}{34+5} \right| \right]^{0}$  $= -1 \times \frac{3}{93} \left[ \log \left| \frac{3(0)-5}{3(0)+5} \right| - \log \left| \frac{3(-1)-5}{3(-1)+5} \right| \right]$  $= \frac{-1}{30} \left[ \frac{\log\left|-\frac{5}{5}\right|}{5} - \frac{\log\left|-\frac{8}{2}\right|}{2} \right]$  $\frac{-1}{30} \left[ \log (-1) - \log (-4) \right] = \frac{-1}{30} \left[ \log (-1) - \log (-1) \right] = \frac{-1}{30} \left[ \log (-1) - \log (-1) \right] = \frac{-1}{30} \left[ \log (-1) - \log (-1) \right]$ er 15 1092

ande, Ane 26°  $x^2 + y^2 = 32 - - u^2$ centre (0,0) sadius = 452 m. 1=70 on soluting is and is eq.  $x^2 + x^2 = 32$ 2x2=32 A (452.0)  $\chi^{2} = 16$  $\chi = \pm 4$ y= ±4 Required Area :-J & dx + 1 4/2 J32-x2 dx  $\left(\frac{\chi^2}{2}\right)_0^{4} + \left(\frac{\chi}{2}\sqrt{32-\chi^2} + \frac{32}{2}\sin^4\frac{\chi}{4\sqrt{2}}\right)_{4}^{4\sqrt{2}}$  $\left(\frac{x^2}{a}\right)_0^{4} + \left(\frac{x}{a}\sqrt{3a}-x^2 + 16\sin^4x\right)^{4/2}$ 3 452) = 1104-1 001 - 11-1.001

9  $(\mathbf{v}$  $\left(\frac{16-0}{2}+\left(\frac{4\sqrt{2}}{2}\sqrt{32-32}+16\sin^{2}\frac{4\sqrt{2}}{4\sqrt{2}}-\left[\frac{4\sqrt{32-16}+16\sin^{2}\frac{4}{2}}{4\sqrt{2}}\right]\right)$ - $(8-0)+(0+16 \sin^{-1}(1)-2\sqrt{16}-16 \sin^{-1}(1))$ =  $8 + (16 \times \pi/a - a \times 4 - 16 \times \pi/4)$ 8+817-8-417 0000 y IT units ins Old Samp 2 3 7 4 A= Anu 25. -2 -4 By dementary noue transformation TA  $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 5 & 7 \\ -2 & -4 & -5 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix}$ 2 A

12 10  $Ra \rightarrow Ra - aR_1$ 1 2 3 1 0 0 7 A 0 1 1 = -2 1 0 -2 -4 - 5  $R_3 \rightarrow R_3 + aR_1$ -1 237 1 1 007 -1 = 1 -2 LO 0 A 1 18 O 1) 2 0 0  $R_1 \rightarrow R_1 - 2R_2$ e [ 5 -2 0] [-2 1 0]A 1 0 0 1 1 5 0 0 1 2 0  $R_1 \rightarrow R_1 - R_3$ 0 07 1 [ 3 -2 -17 0 1 1 -2 10 1 = A O 0 1) 2 011 Ra - Ra-Rg

11 -2 -1.7 - Commence in strenger and sent 0 O 1 0 0 0 AT A 3 -2 -1 Thurefore, AT = -4 1 -1 0 0 0 2 1 Jacob 4 to deside as the point whereas home way the for To snow : R is an equivalence relation An 240 the setting of the provider of Solution\_ For Replexive :-(a,a): a,a EA ara tatA la-al us divisible by 4 Ous divisible by 4 which is true Rusa repuxine relation. => a- 21 - 4 (2+ 4) AADIA BAD A

12 Eve Symmetric relation :let (a, b) ER + a, b EA arb vaiber 12-b) i divisible by 4 16-al is divisible by 4 \$ \* bra v brach > (b.a) eR > Rui an eymoutour relation since (a, b) + R valo (b, a) + R To summing a set concentration of the for tranitive velation :elet (a,b) ER and (b,c)ER + a,b,cEA arb and bric + a,b,c th  $|a-b| \stackrel{\circ}{u} \stackrel{\circ}{dim} \stackrel{\circ}{u} \stackrel{\circ}{b} = \frac{4}{3} - \frac{1}{4}$ 1b-cl = 4ul -ul $u^{2} + u^{2}$  $|\alpha - b + b - c| = 4 (\lambda + u)$ 1 a - c1 = 4 (1+ u) ⇒ aRC + a,CEA

$$\Rightarrow (a,c) \in \mathbb{R}$$

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$$\Rightarrow (a,c) \in \mathbb{R}$$

$$f us an transitive valation shall (a,b) \in \mathbb{R}, (b,c) \in \mathbb{R} and also (a,c) \in \mathbb{R}$$

$$f us a transitive valation of transitive so it us a converting of the source of the sour$$

14 Bobability Dutribution :-3 5 Y 2 X 3/10 2/10 4/10 110 P(X) Mean HENRY R. MANNELLEVILLE, RISMAR POLL  $\xi(x) = \xi P_i x_i^\circ$  $\frac{2P_{1}^{2}x_{1}^{2}}{10} = \frac{2x_{1}}{10} + \frac{3x_{2}}{10} + \frac{4x_{3}}{10} + \frac{5x_{4}}{10}$  $\frac{\xi P_{1} x_{1}^{\circ}}{10} = \frac{a}{10} + \frac{6}{10} + \frac{12}{10} + \frac{20}{10} = \frac{40}{10} = \frac{4}{10} \text{ uny}$ 201 Variance  $\Xi P_i^{\circ}(X_i^{\circ}) - (\Xi P_i^{\circ} X_i^{\circ})^2$  $= \begin{pmatrix} 4 \times 1 + 9 \times 2 + 16 \times 3 + 25 \times 4 \\ 10 & 10 & 10 \end{pmatrix} - \begin{pmatrix} 16 \\ 16 \end{pmatrix}$ T  $= \left(\frac{4}{10} + \frac{18}{10} + \frac{48}{10} + \frac{100}{10}\right) - (16)$ =  $\left(\frac{170}{10}\right) - 16$ = 17-16 = 1. day Standard demation 1 cons

$$\frac{15}{4}$$

$$\frac{16}{4}$$

$$\frac{1}{82}$$

16  $\vec{x} = (4\hat{x} - \hat{j}) + \lambda (\hat{x} + \hat{z} - \hat{j}\hat{x})$ Any 21:  $\vec{\alpha_1} = 4\vec{\alpha_1} - \vec{\beta} + 6\vec{k}$  $\vec{\beta_1} = \vec{\alpha_1} + \vec{\alpha_2} - 8\vec{k}$ 5 - 1 = (1319  $\vec{x} = (\vec{u} - \hat{j} + a\hat{k}) + u(a\hat{u} + 4\hat{j} - 5\hat{k})$  $a\vec{z} = \hat{u} - \hat{j} + 2\hat{k}$  $b\vec{z} = 2\hat{u} + 4\hat{j} - 5\hat{k}$ Shortat distance = ( Car-ai). (bi x b2) 167×621 NOUL,  $a\vec{z} - a\vec{r} = (\hat{u} - \hat{j} + 2\hat{k}) - (4\hat{u} - \hat{j} + 0\hat{k})$ =  $-3\hat{u} + 0\hat{j} + 2\hat{k}$ = -31+2k bi K bi = u j k | 1 2 -3 |

=  $\mathcal{L}(-10+12) - \mathcal{L}(-5+6) + \mathcal{K}(4-4)$   $(bi^{2}xb^{2}) = \sqrt{4+1+0} = \sqrt{5}$ bix bi  $p_1 \times p_2 = 2 p_1 - 1 + 0 K$ Noul, (- 31+01+2k). [21-1+0k) d = VU+1+0 - 3x2+0x-1+2x0/ d =  $d = \frac{-6+0+0}{-6+0+0}$ 5 or / so per 1 10 00 0000000 d = 6 units why let d'be xi+yj+zk Any 20 NOW, d'LC  $(x\hat{i}+y\hat{i}+z\hat{k})\cdot(3\hat{j}+\hat{j}-\hat{k})=0$ 3x + y - x = 0 —  $\vec{\omega}$ Allo,  $\vec{d} \perp \vec{b}$  $(\chi_{1}^{+} + y_{1}^{+} + \chi_{k}^{+}) \cdot (J_{1}^{-} + J_{1}^{+} + J_{k}^{+}) = 0$  $\chi_{-} + y_{1}^{+} + J_{k}^{-} = 0$  (ii)

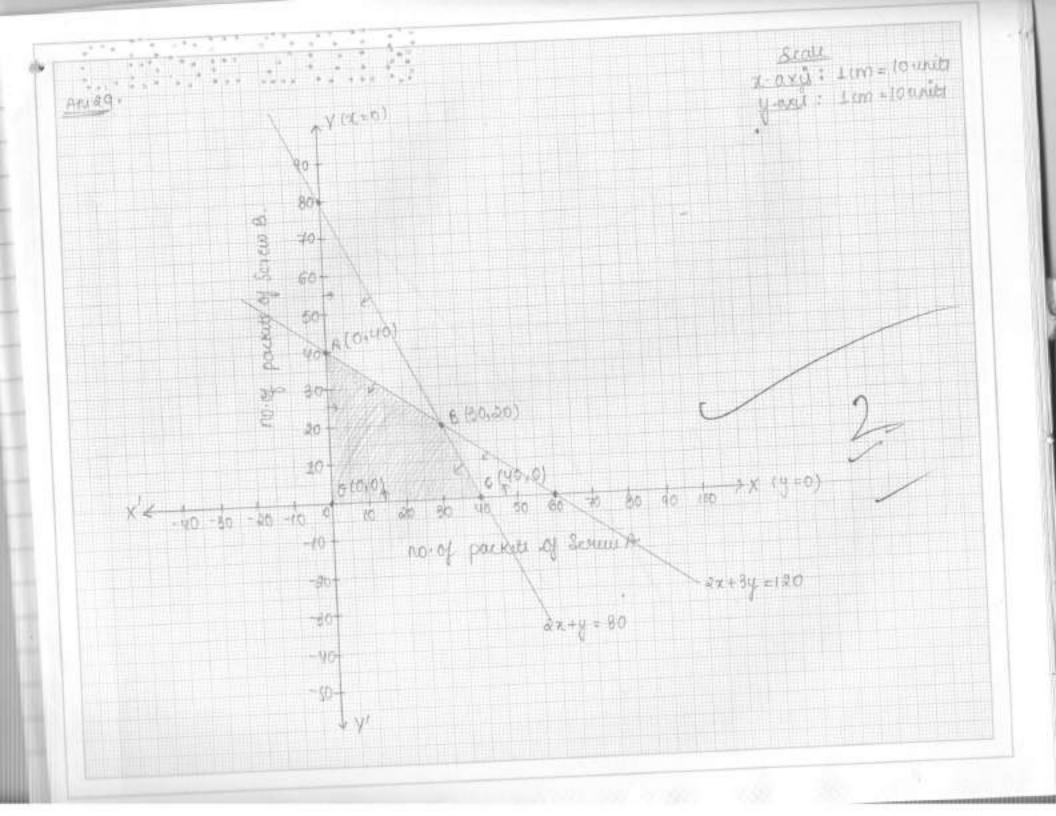
18 Auo,  $\vec{d} \cdot \vec{a} = \vec{a}$  $(x_{4}^{\circ} + y_{j}^{\circ} + z\hat{k}) \cdot (y_{4}^{\circ} + 5j - \hat{k}) = 21$ Solving is and in equation 3x+y-z=0 $-4x+5y\neq x=21$ -x - 4y = -21 $\Rightarrow \alpha + 4y = 21 - av$ Multiply is by 5 and add to wir eq. 15x + 05y - 5z = 0+ x = 44, + 8 x = 0. 16x+y=0(1) Soluing (iv) and weg. 2+44 = 21 - 64x+ yy = 0 -63x = 21  $\frac{x = -21}{63} = -\frac{7}{21} = -\frac{1}{3}$ 

19 Rutting value of x is eq. (1).  $\chi + 4\dot{A} = 3$  $\frac{-1}{3} + 4y =$ Q Parts 4y = a1 + 14y = 63 + 1\*\*\*\*\* \* \* \* \*\*\* 114 3 .  $4y = \frac{64}{3}$  $y = \frac{6y}{12} = \frac{3x}{6} = \frac{16}{3}$ Allo, 3x + y - x = 0 $\Im\left(\frac{-1}{3}\right) + \frac{16}{3} = \pi$ -1 + 16 = Z $-3+16 = \lambda$ ,  $\chi = 13$ Thumpone,  $\vec{d} = -1 \cdot \vec{l} + 16 \cdot \vec{l} + 19 \cdot \vec{k}$ dy  $= \frac{1}{3}(-1+16(+13k)) d_{2}$ 

20 cone 19. dy + 2y tanz = sinz on comparing the above equation with the standard linear equation  $\frac{dy}{dx} + Py = Q$ ue get, P = 2 tanze, d = sinze Therefore, I.F. = p jpdx  $T \cdot F \cdot = e^{2\int tan x \, dx}$ =  $e^{2\int tan x \, dx}$ 201 e dog (secx) = Sec<sup>2</sup>x NOLLI .  $Y \cdot I \cdot F = \int dx I \cdot F dx$ y. Sec x = [ Since x Sec x dx  $y \cdot \sec^2 x = \int \operatorname{sin} x \times \frac{1}{\operatorname{cot}^2 n} dn$ y. sech = f tanx. secx dr Put sec x = it (seex tanz) dx = dt

21 y. sector = 1 st dt (F192+1)(xn)2-1) . y. Sec2x = it tC b - enio tus y. sector = sec x + C. 100 NOW when y=0, x= 17/3.  $0 = Sec \frac{17}{3} + c$ , 0 = +2 + c. and the production of the second c = -2Solution = y. sec x = sooc - 2. = 1 - 2 Secx Secx 08or. y = secx - 2 (sec x) due 1-2-8+221 ALLEY . BY A . CHER

22  $\int \frac{d\cos x}{(1-\sin x)(1+\sin^2 x)} dx$ Arul8. 10 - 1 - 2 - 2 - 1 - 0.1 11 h = white-Put sin x = it In trained brance / YO  $\cos x \, dx = dt$  $\frac{2}{\left(1-t\right)\left(1+t^{2}\right)}$ Nou by partial fraction,  $= \underline{A} + \underline{B}\underline{t} + \underline{C}$   $l - \underline{t} \qquad l + \underline{t}^{2}$ - t) (1+ + 1) THE REAL PROPERTY.  $l = A(1+t^{2}) + (Bt+c)(1-t)$  $l = A + At^2 + Bt - Bt^2 + C - Ct$  $A + c = 1 - a^{\circ}$ A-B=O —  $\omega$ B - c = 0 — will  $(\hat{u}) + (\hat{u})$ A+C+B-C=1A+6=1 ----(iv)  $A - B = O - \omega')$ 2A=1 A=1/2, B=1/2, C=1/2



27  $2\int \frac{42}{1-t} + \frac{42t+42}{1+t^2} dt$  $\frac{\mathcal{X} \times 1}{\mathcal{X}} \int \frac{dt}{1-t} + \frac{\mathcal{X} \times 1}{\mathcal{X}} \int \frac{dt+1}{dt} dt$  $\int \frac{dt}{1-dt} + \int \frac{dt}{dt+1} + \int \frac{dt}{dt+1}$  $\int \frac{dt}{1-t} + \frac{1}{2} \int \frac{2t}{t^2+1} \frac{dt}{1-t^2+1} + \int \frac{dt}{t^2+1}$ - log(1-it) + 1 log(12+1) + tant it + c. L - log (1-sinx) + 1 log (1+sin2x) + dan (dinx) + c. \$ 1 log (It sim a) - log (I-simx) + tant (simx) + C Aug = log (1+ sin x) + log (1-sinx) + taut (sinx)+c. =  $\log \left| \frac{\sqrt{1+\sin^2 x}}{1-\sin x} \right| + \tan^2 (\sin x) + c$ . Deycswa 0412403

28 het, length = breadth = 2 Jon 170 height = y. volume = xxxxy the grants  $K = \chi^2 y.$  $y = \frac{K}{\chi^2}$ According to question, 6 48 46 1 14 6  $S = \alpha^{2} + 4\alpha y$   $S = \alpha^{2} + 4\alpha x \frac{K}{\alpha^{2}} = \alpha^{2} + \frac{4\kappa}{\alpha}$ ----- $\frac{dg}{dx} = \frac{3x - 4K}{x^2} = \frac{3x^3 - 4K}{x^2}$ Put de =0 for critical points TO KENTER HOUSE HOUSE AND - 4K =000 HO PAU x2 2x2-4K=0  $\frac{\chi^3 = 2k}{\chi = (2k)^{43}}$ 

29 Now,  $\frac{d^2s}{dx^2} = 2 - 4K(-2) = 2 + 8K$  $\frac{dx^2}{x^3} = \frac{2 + 8K}{x^3}$  $\left(\frac{d^2 s}{d^{n+1}}\right) = 2 + \frac{8k}{2k} = 2 + 4 = 6$  $\frac{d^{n+1}}{2k} (x = (2k)^{1/3}) = 2k$ d's >0 hend út is minimum. dre Now,  $y = \frac{K}{\chi^2}$ \_K 1/3 22/3  $y = \frac{K}{(2K)^{2/3}} = \frac{K \cdot K^{-7/3}}{(2)^{1/3}} =$ (2K)2/3  $y = K^{1/3} \times 2^{-2/3}$  $y = 2^{-1} (a K^{1/3})$ \$ ( 25 )  $y = \frac{1}{2} (2k)^{43}$ 2 Hence Bround.  $y = \frac{1}{2} \alpha$ the the same Value :- Helping un nature Support to middle class people cooperature & concern towards poor.

$$\frac{30}{(x)} = \frac{x^{4} - x^{3} - 5x^{2} + 24x + 12}{y}$$

$$\frac{1}{(x)} = \frac{1}{(x)} + \frac{1}{(x)} = \frac{1}{(x)} + \frac{1}{(x)}$$

31 (a) Strictly inversing =  $(-3, 2) \cup (4, \infty)$  (2,4) (b) Strictly durating =  $(-\infty, -3) \cup (2, 4)$ (4810) -17) 08 Ja y = sinze (sinz) conc15  $\frac{dy}{dx} = xos(sinx) \cdot colx \Rightarrow colx = (or(sinx)) = 1 \cdot dy$ NOW, dy = - cor(simx) simx + cosx(-sim(simx) corx)  $\frac{d^2y}{d^2y} = -\sin x \cos(\sin x) - \cos^2 x \sin(\sin x).$ dx2 and the date and the source where the  $\frac{d^2 y}{dx^2} = - c \ln x \times 1 \times \frac{dy}{dx} - c \partial x^2 y.$ d'y - - tanx dy - coercy. dx+  $\frac{d^2y}{dx^2} + \frac{dy}{dx} + \frac{dy}{dx} + \frac{y}{dx} \cos^2 x = 0.$ Hence Por

양 옷이 있 공항공의 32  $x = 0.(20 - \sin 20)$ Anu14°  $dx = \alpha \left( 2 - 2 \cos 2\theta \right)$  $d\theta dx = aa(1-corae)$ do  $y = \alpha (1 - col 20)$  $\frac{dy}{d\theta} = a \left( 0 + 2 \sin a \theta \right)$   $\frac{dy}{d\theta} = a \sin a \theta$  $\frac{dy}{dx} = \frac{dy}{d0} \times \frac{d0}{dx} = \frac{2d}{2d(1-co(20))} = \frac{2nn0}{2nn0} \frac{nn0}{0}$  $\frac{dy}{dx} = x \cot \theta$  $\left(\frac{dy}{dx}\right)_{(0=173)} = xot \frac{\pi}{3}$ = uot (60°) Manager Paralle Any

1 1 1+32 Any 130 1 1+3× 1 0 1 1+3x/ Comments 15 10 1 34 1 6 (210) 10 10 (01) (01) (02) (21) -32 1+32 1 1 Taking & rommon from C 0 1 1+3% 3 AL = 403  $R_2 \rightarrow R_2 - R_1$ 3 1 0 1 -1+3x / y 0 -3x -2 1+32 1 Expanding calong RI 3 [-i(y - 3xx) + (1+3x)(y+3xy)] 3 [- y + 3xx + y + 3xy + 3xy + 9xyz] 3 [ 9xyz + 3xx + 3xy + 3xy) 9 ( 3xy x + xy + yx + xx) why

33

34 het & = Event of obtaining the sum 8" Ane 120  $e_1 = \{(2,6)(6,2)(3,5)(5,3)(4,4)\}$ and F = "Event that red die result in a number sen than 4." F= ((1, 1) (2,1) (3,1) (4,1) (5,1) (6,1) 7-0 g (1,2) (2,2) (3,2) (4,2) (5,2) (6,2) p (1,3) (2,3) (3,3) (4,3) (5,3) (6,3) = P(EnF) or m(EnF)P(E/F) P(F) n(F) $E, DF = \{(6, 2), (5, 3)\}$  $\frac{a}{36}$ , n(F) = <u>18</u> <u>36</u> m(EnF) = 2 8 = Any 36 P(E1/F) 18 18 36 and the strates and marked the (128+ 8) (26+1) + (2x8 - 4) Lexe + ux8 + xx8 + xuxP

35 Angue, at  $\vec{a} = \vec{i} - a\vec{j} + 3\vec{k}$   $\vec{a} \times \vec{b} = \int \vec{u} \cdot \vec{j}$ ĸ  $|\vec{a}| = \sqrt{1 + 4 + 9} = \sqrt{14} \qquad \qquad 1 - 2 3.$   $\vec{b} = 2^{2} - 2^{2} + 2^{2}$  $\vec{b} = 3\hat{i} - \hat{a}\hat{j} + \hat{K}$ = 41+8j+4K  $1\vec{b}| = \sqrt{q+q+1} = \sqrt{14}$  $[\vec{a} \times \vec{b}] = \sqrt{(6+64+16)} = \sqrt{96} = 4\sqrt{6}$ [a x b] = 1a] [b] Sim O 2 456 = JI4 × JI4 × sino 456 = 14 Dino  $ain \phi = \frac{4\sqrt{6}}{14} = \frac{2\sqrt{6}}{7}$ 0 = sin + ( 216) Any bx + 5Uchy 10 . y = ae  $dy = a e^{bx+5}(b)$  $dx \quad \frac{dy}{dx} = ab e^{bx+5}$  $dx \quad \frac{dy}{dx} = by$  $dx \quad 1.dy$ I.dy = b y dr

36 Nyferentialing again wirt xe  $y \frac{d^2y}{dx^2} - \frac{dy}{dx} \times \frac{dy}{dx} = 0$ = 0 · y diy dy due COI 2x + 2 Sin 2x de Ani9º 2 sin x + 2 sin x dx C cot 2 Sector da tanx + c 2

1 3 m 1 3 m 1 3 m 37 Sector Sector  $(x) = 0.005x^2 - 0.02x^2 + 30x + 5050$ Any8°  $C'(x) = 0.005(3x^2) - 0.02(2x) + 30$  $c'(x) = 0.015 x^2 - 0.04 x + 30$ when x = 3.  $('(3) = 0.015(3)^{2} - 0.04(3) + 30$ = 0.015(9) - 0.04(3)+30 = 0.135 - 0.12+30 = 30.015 dwe of Lond tan (1+ corx) See 51-91 = 141 Any 7º tan 1 ( 2 cos 2 x/2 ) 2 sin x/2 cos x/2) a the sector Standy & Park =.  $tan^{-1}\left(\frac{\cos x/2}{\sin x/2}\right)$ 4  $y = tan^{-1}(\cot x/a)$  $y = \tan^{-1} \left[ \tan \left( \frac{\pi}{2} - \frac{\pi}{2} \right) \right]$  $y = \frac{1T - \chi}{2}$ 

81053888 38  $y = \frac{11 - x}{2}$ Rigerentiating with a  $\frac{dy}{dx} = 0 - 1$ The second secon 5 H: (6) Y D H) - (6) (6) (6) - (8)  $\frac{dy}{dx} = -\frac{1}{2} \frac{dy}{dx} = -\frac{1}{2} \frac{dy}{dx}$  $A = \begin{bmatrix} 2 & -3 \\ -4 & -7 \end{bmatrix}$ Apr 6º 1A1= 14-12 = 2 (Al \$0 hence Snurge exite ~ × 3 mil Noull,  $C_{11} = 7$ ,  $C_{12} = +9$ Cal = +3, Caa = 2Ady'(A) = 73 ( \_1) 182 \ 'muth \_\_\_\_\_  $A^{+} = \lim_{l \to l} ady^{\circ}(A) = \lim_{l \to l} \left[ \begin{array}{c} 7 \\ 2 \end{array} \right] \frac{1}{\sqrt{2}} \frac{1}$ 

39 2 A - = 9I - A  $2 \times \frac{1}{2} \begin{bmatrix} 7 & 3 \\ 4 & 2 \end{bmatrix} = 9 \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} - \begin{bmatrix} 2 & -3 \\ -4 & 7 \end{bmatrix}$ 5 0 10 = [5 ]  $\begin{bmatrix} 7 & 3 \\ 4 & 2 \end{bmatrix} = \begin{bmatrix} 9 & 0 \\ 0 & 9 \end{bmatrix} \begin{bmatrix} 2 & -3 \\ -4 & 4 \end{bmatrix} = \begin{bmatrix} 9 & 0 \\ 0 & 9 \end{bmatrix} \begin{bmatrix} 2 & -3 \\ -4 & 4 \end{bmatrix}$ =  $\begin{bmatrix} 7 & 3 \\ 4 & 2 \end{bmatrix}$ Hence Pooued. < 2 < 1 2  $3 \sin^{-1} x = \sin^{-1} (3x - 4x^3)$ Ans. R.H.S. win (3x-4x3) -1 5 &in 0 5 1 Put x = Simo. Sin ( 33in 0 - 4 sin 0) sim (1) = O = sim (1) Sint (singo)  $-\Pi \leq 0 \leq \Pi$ 30 3 Sin to  $\left[\frac{1}{3}, \frac{1}{3}\right] \leftarrow \left[\frac{-1}{2}, \frac{1}{2}\right]$ RHS = LHS Hence Proces

40  $a \circ b = (a \times b) + 3$ Anu4-(5 \* (0) +3 ... 5010 = 10 + 3= 13 Aw V Alene East  $|\vec{a}| = |\vec{b}|$ Any 30 a. b = 1a1 1b1 con 0 = 10°110°1 COS 60° 9 2  $9 = (a^{-1})^{2-1} \times 1$ 2 2  $q = |\vec{a}|^2$  $|\vec{a}| = 3$ . 1 2 With D - Birthe V read A40 101 = 151 151=3  $|\vec{a}| = |\vec{b}| = 3$ and 211.74 T-T-T

1-1 5 3 3 4 41 ion 2: A us a skell symmetric matrix A'= - A  $A = \begin{bmatrix} 0 & 0 & -3 \\ 2 & 0 & -1 \end{bmatrix}$ 6 1 0 0 2 6] A = Q 0 1 0J -1 A'=-A [ 0 a - 37 0 2 6 NOUL, 20-1 a 01/=-0) -3 -1 ro 2 07 (0 - a 37 a 0 1/= /-2 0 -3 -1 0 ] L-6 -1 0 On comparing me get, b=3 a=-2 Any

