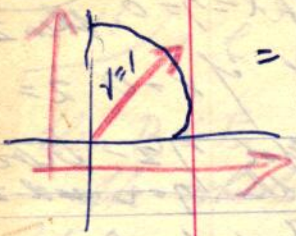
1007) 8/10/71 p453: 3

1017) $z = 4 - r\cos\theta - 2r\sin\theta$ Then $V = \int_0^{\frac{\pi}{2}}\int_0^1 (4 - r\cos\theta - 2r\sin\theta)\, r\,dr\,d\theta$



$= \int_0^{\frac{\pi}{2}} \int (4r - r^2\cos\theta - 2r^2\sin\theta)\, dr\, d\theta$ p481 (4) (2)

$= \int_0^{\frac{\pi}{2}} 2r^2 - \frac{r^3}{3}\cos\theta - \frac{2}{3}r^3\sin\theta \Big|_0^1 d\theta = \int_0^{\frac{\pi}{2}} \left(2 - \frac{1}{3}\cos\theta - \frac{2}{3}\sin\theta\right) d\theta$

$= \int 2 \cancel{\frac{1}{3}} \; (2\theta - \frac{1}{3}\sin\theta + \frac{2}{3}\cos\theta \Big|_0^{\frac{\pi}{2}}$

$= \pi - \frac{1}{3} + 0 - (0 + 0 - \frac{2 \cdot 1}{3}) = \pi - \frac{3}{3}$ $r = 1$ The arithmetic

vos barre diff pour lamme, de non plus pas de genre.

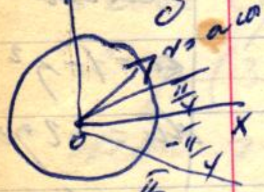
This ex shows that the transfer to c.c facilitates arithmetic p488: 8 (similar to SSJ p481 Ex 2

10 9/12/71 SSJ p481 Ex 2 in 4 482: 6 $f(r,\theta) = z$

Fig 176 c = ok (mais homme should do axle →

$V = 2\int_0^{\frac{\pi}{4}}\int_0^{a\cos 2\theta} \underbrace{(z = r\cos\theta)}_{} \; r\cos\theta \; r\,dr\,d\theta$ (p482: 6

$z = f(r,\theta)$ in c.c.



$\int_0^{\frac{\pi}{4}} \cos^3 2\theta \cos\theta\, d\theta$

lemme: $\cos^2 + \sin^2 = 1$

$\cos^2 + \sin^2 \cos^2$

$\frac{2a^3}{3}\int^{\frac{\pi}{4}} (1 - 2\sin^2\theta)^3 \cos\theta\, d\theta$ | 1/13/71 Subst $2\sin^2 = 1 - \cos 2\theta$

$\cancel{1 - 2\sin^2\theta} = \cos^2 2\theta$

$= \frac{2a^3}{3}\int_0^{\frac{\pi}{4}} (1 + 4\sin^4\theta - 4\sin^2\theta)(1 - 2\sin^2\theta)\, d\theta$ B66

$= \frac{2a^3}{3}\int_0^{\frac{\pi}{4}} \cancel{\cos\theta} (1 + 4\sin^4\theta - 4\sin^2\theta - 2\sin^2\theta - 8\sin^6\theta + 8\sin^4\theta$

$= \frac{2a^3}{3}\int_0^{\frac{\pi}{4}} (\cos\theta + 12\sin^4\theta\cos\theta - 6\sin^2\theta\cos\theta - 8\sin^6\theta\, d\theta$

$= \frac{2a^3}{3}(\sin\theta + \frac{12}{5}\sin^5 - 2\sin^3\theta - \frac{8}{7}\sin^7$

SSJ 478 Find the Volume in the 1st octant unde but dx, dy only means, any function (here $z = f(x,y)$) is being differentiated. C'est la seule chose that f has to contain x and y and could be work mass or anything or z 1020

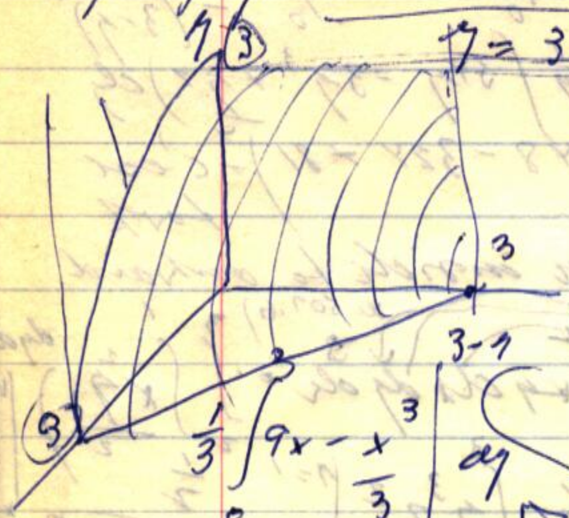
p 480: 11 (Trouvé 18th Ras!

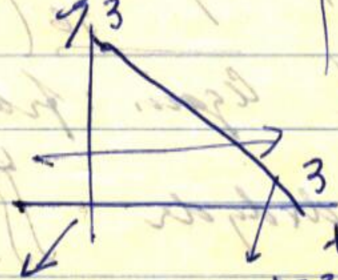
Graphing of $3z = 9 - x^2$ (Parabola)

$x=0 \quad z=3$
$z=0 \quad x=3$

$y = 3 - x \quad x=0 \; y=3 \quad y=0 \; x=3$

(1) fort





$$\int_0^3\int_0^{3-y} z\,dx\,dy$$ 1027

pas fort = ok

$$=\frac{1}{3}\int_0^3\int_0^{3-y}(9-x^2)\,dx\,dy$$

$$\frac{1}{3}\int_0^3\left[9x-\frac{x^3}{3}\right]_0^{3-y} dy$$ see 1019 (Rule pour terme

$$=\frac{1}{3\cdot3}\int_0^3 27-9y-(27+9y^2-27y \qquad x^3=(3-y)^3=(9+y^2-6y)(3-y)$$
$$= 27+3y^2-18y-9y-y^3+6y^2$$

$$\frac{1}{3}\int_0^3 27-9y-\left(9+3y^2-9y-\frac{y^3}{3}\right) = \frac{1}{3}\int_0^3\left(18-3y^2+\frac{y^3}{3}\right)$$ 1027

$$=\frac{1}{3\cdot3}\int_0^3(54-9y^2+y^3)\,dy \quad \frac{1}{9}\left(54y-3y^3+\frac{y^4}{4}\right)_0^3 = 162-81+\frac{81}{4}$$

$\frac{81+81}{4}$ ok (11/23/71

9 | 79 | 71 3)(?) 276 The bout d'une ... in vain, fig and arithmetic seem ok but no solution trouvé. Aujourd'hui 11/24 pense que x z = basis like p 479: (8) mais cela aussi ~~facile~~ difficile ?!!

Hommel was right 11/23/71

(8) $y = F(x, z)$

$$\int_0^3\int_0^{x=\sqrt{9-z}}(3-y)\,dx\,dz$$ (appears fort)

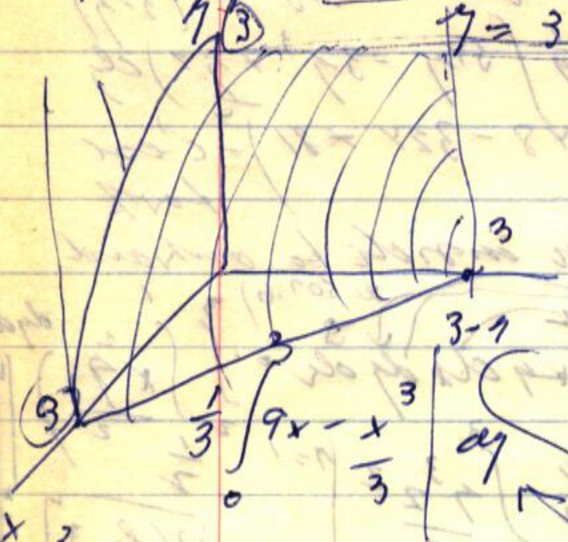
but dx, dy only means, any function (here $z = f(x,y)$) (1020) is being differentiated. C'est la seule chose that f has to contain x and y and could be work mass or anything or z

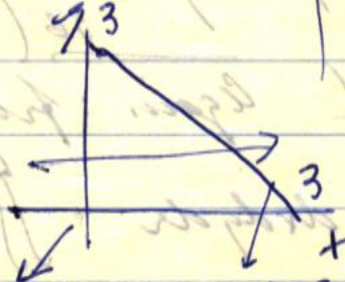
p 480:11 (Trouvé 78 th Ros!

graphing of $3z = 9 - x^2$ (Parabola)

$x=0 \quad z=3$
$z=0 \quad x=3$

$y = 3 - x \quad x=0 \; y=3$
$y=0 \; x=3$





$$\int_0^3\int_0^{3-y} z\,dx\,dy$$

1022

$x = 3-y$

$$= \frac{1}{3}\int_0^3\int_0^{3-y}(9-x^2)\,dx\,dy$$

(partout = ok)

$$\frac{1}{3}\int_0^3\left[9x - \frac{x^3}{3}\right]_0^{3-y} dy$$

see 1019 (Rule pour lemme