$(-3,-2)$

$(1,0)$

$$\frac{y+2}{x+3} = \frac{2}{4}$$

$$\frac{y+2}{x+3} = \cancel{\frac{y}{x}}\ 1\ \frac{2}{4}$$

$4y+8 = 2x+6$

$4y = 2x-2$

$y = \frac{x-1}{2}$

$4(y+2) = 2x+6$

$4y+8 = 2x+6$

$4y+2$

$$\int_0^1 \int_y^{\sqrt{y}} 120x^3y^3\,dx\,dy$$

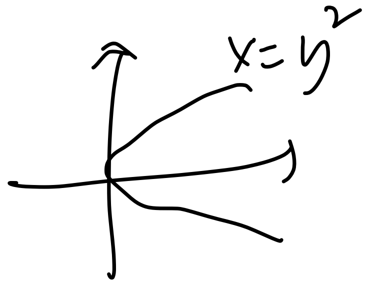
$$= \int_0^1 \left[30x^4y^3\right]_y^{\sqrt{y}}\,dy$$

$$= \int_0^1 30\sqrt{y}^4y^3 - 30y^4y^3\,dy$$

$$= \int_0^1 30y^5 - 30y^7\,dy$$

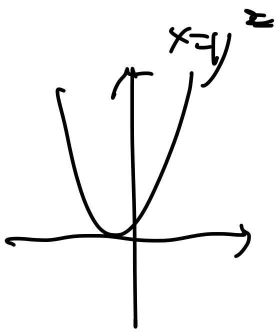
$$= \left[\frac{30}{6}y^6 - \frac{30}{8}y^8\right]_0^1$$

$$\int_0^3 \int_{y^2}^9 y\sin(x^2)\,dx\,dy$$



$$\int_0^{\sqrt{x}} \int_0^3 y\sin(x^2)\,dy\,dx$$

$$= \int_0^{\sqrt{x}} \left[\frac{y^2}{2}\sin(x^2)\right]_0^3 dx$$



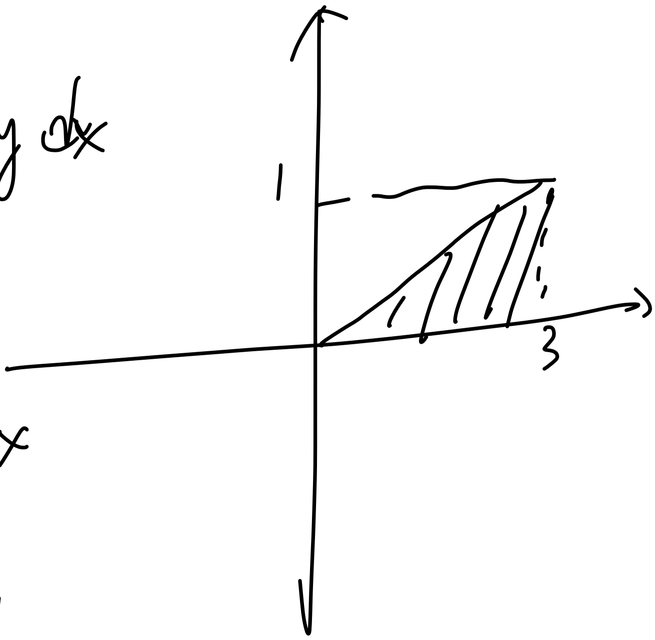
$$= \int_0^{\sqrt{x}} \frac{9}{2}\sin(x^2)\,dx$$

$$= \int_0^9 \int_0^{\sqrt{x}} y\sin(x^2)\,dy\,dx$$

$$= \int_0^9 \left[\frac{y^2}{2}\sin(x^2)\right]_0^{\sqrt{x}} dx$$

$$= \int_0^9 \frac{x}{2}\sin(x^2)\,dx$$

$$\int_0^1 \int_{3y}^3 e^{x^2}\,dx\,dy \qquad x=3y.$$



$$= \int_0^3 \int_0^{\frac{1}{3}x} e^{x^2}\,dy\,dx$$

$$= \int_0^3 \left[e^{x^2} y\right]_0^{\frac{1}{3}x} dx$$

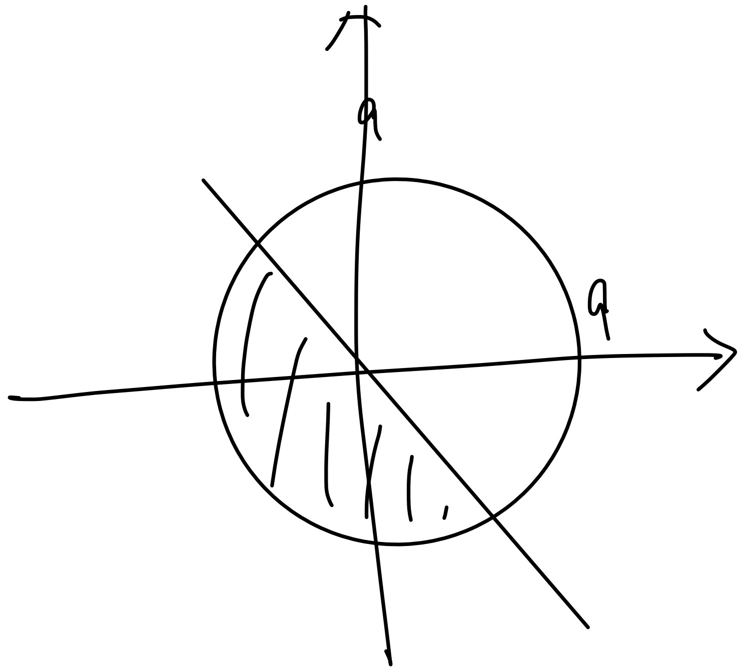
$$= \int_0^3 \frac{1}{3} x e^{x^2}\,dx$$

$$= \frac{1}{3}\int_0^3 x e^{x^2}\,dx \quad \text{let } u = x^2,\ du = 2x\,dx$$

$$dx = \frac{1}{2x}\,du$$

$$= \frac{1}{6}\int_0^9 e^u\,du$$

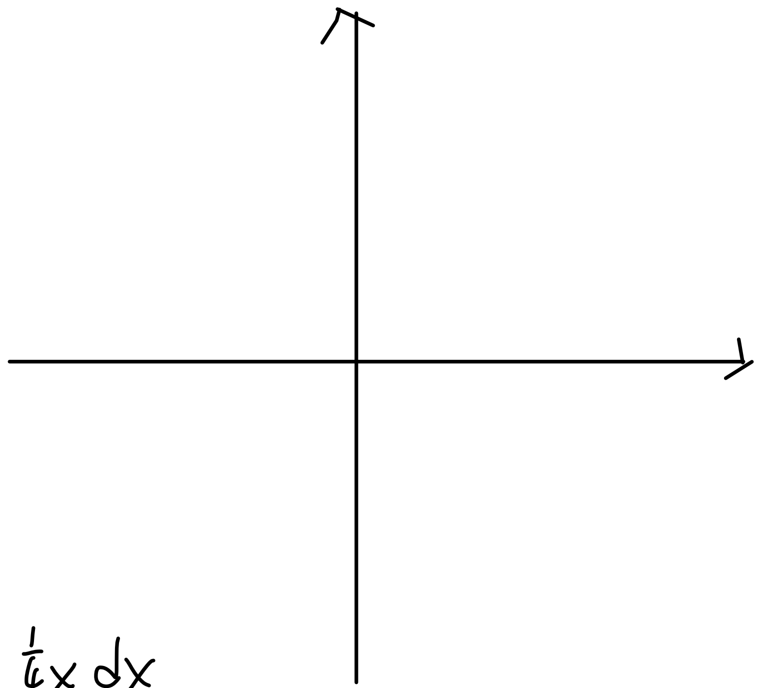
$$= \frac{1}{6}\left(e^9 - 1\right)$$



$$\int \int \quad r \; dz\, dr\, d\theta$$

$y = \sqrt{18x - x^2}$

$y^2 = 18x - x^2$



$= \int_0^4 \frac{3}{4}x - \frac{1}{4}x \, dx$

$= \left[\frac{3}{4} \frac{x^2}{2} - \frac{1}{4} \frac{x^2}{2} \right]_0^4 = \left[\frac{3}{4} \cdot 8 - \frac{1}{4} \cdot 8 \right]$

$(4,3)$

$((0,0))$

$\int_0^4 \int_{\frac{1}{4}x}^{\frac{3}{4}x} dy \, dx$

上:

$\frac{y-3}{x-4} = \frac{-3}{-4}$

$-4(y-3) = -3(x-4)$

$-4y+12 = -3x+12$

$-4y = -3x$

$y = \frac{3}{4}x$

下: $(4,1)$ $(0,0)$

$\frac{y-1}{x-4} = \frac{-1}{-4}$

$-4y+4 = -x+4$

$-4y = -x$

$y = \frac{1}{4}x$

$$\vec{F} = \begin{vmatrix} i & j & k \\ x & y & z \\ 6 & 7 & 6 \end{vmatrix}$$

$$= \langle 6y - 7z,\ 6z - 6x,\ 7x - 6y \rangle$$

$$\operatorname{div} \vec{F} = \nabla \cdot \vec{F}$$

$$= 0 + 0 + 0$$

$$\begin{vmatrix} 6 \end{vmatrix}$$

$$(x^2 - \sin(xy))\,i - (\sin(xy))\,j$$

$$2x - y\cos(xy) - x\cos(xy)$$

$$\begin{vmatrix} i & j & k \\ \frac{\partial}{\partial x} & \frac{\partial}{\partial y} & \frac{\partial}{\partial z} \\ 2yz & 4xz & 9xy \end{vmatrix}$$

$$\langle 9x-4x,\ -7y,\ 2z \rangle$$

$$\int \vec{F} \cdot \vec{r}(t)\, ds$$

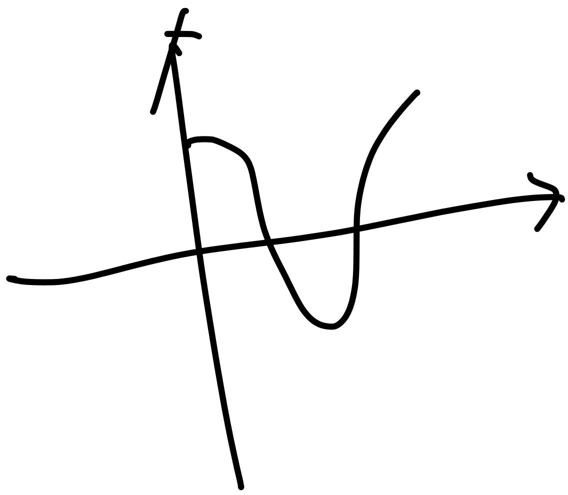
$3x^2 + 3y^2 + 7z$

$$= \int \vec{F} \cdot d\vec{r}$$

$$= f(\vec{r}(2\pi)) - f(\vec{r}(0))$$

$$f(4, 0, 4\pi) - f(4, 0, 0)$$

$$= f($$



$=$

$f =$

$\langle 3, 4\rangle$ to $\langle 8, 9\rangle$

$$\frac{9-4}{8-3} = \frac{y-4}{x-3}$$

$$x-3 = y-4$$

$$x+1 = y$$

$$y = x+1$$

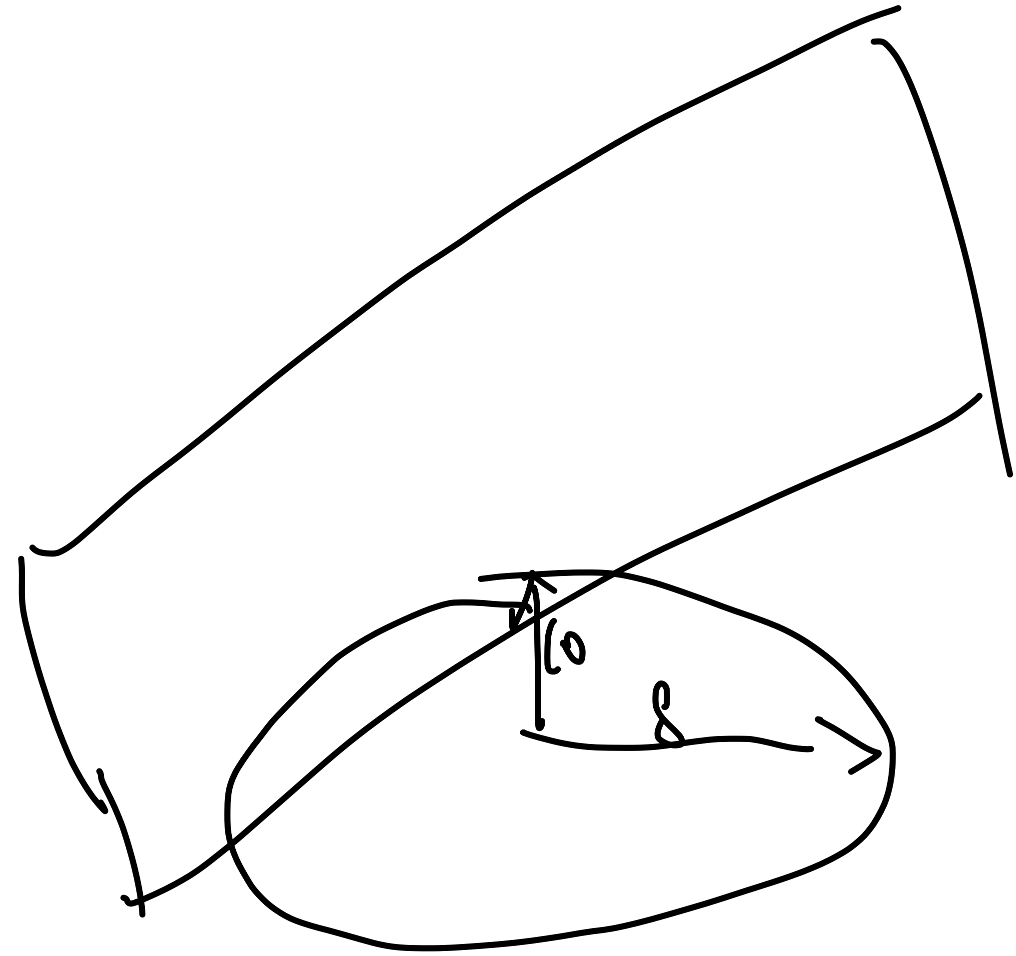
$$\langle t, t+1\rangle$$

$$\int 6(t+1)\,dt + 3t\,dt$$

$$= \int_3^8 9t + 6\,dt$$

$$= \left[\frac{9t^2}{2} + 6t\right]_3^8$$

$$=$$



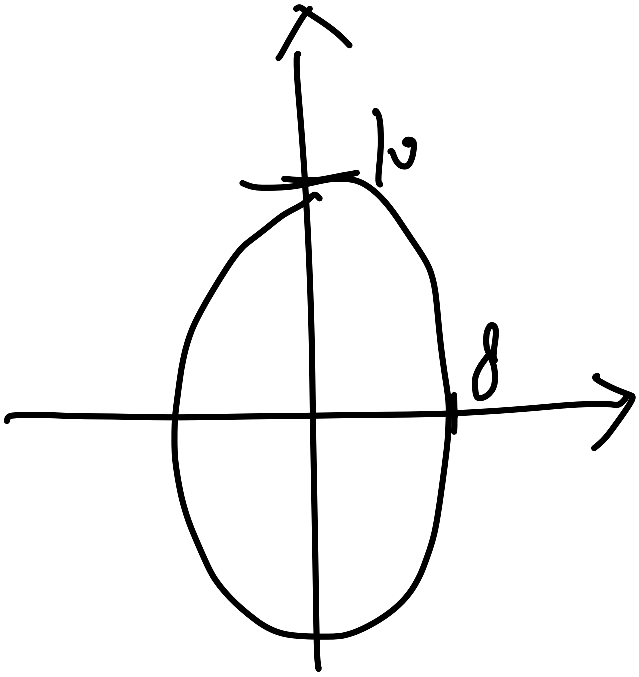
$z = 3 - 6x - 7y$

$8\cos t,\ 10\sin t$

$$\iint (3 - 6r\cos t - 7r\sin t)\,r\,dr\,d\theta$$

$z = 3 - 6x - 7y$

$$\int_{-10}^{10} \int_{-\sqrt{64 - \frac{16y^2}{25}}}^{\sqrt{64 - \frac{16y^2}{25}}} 3 - 6x - 7y \; dx\,dy$$



$$\iint \sqrt{1 + 6^2 + 7^2}$$

36
$\cancel{14}$
50

$$\frac{x^2}{64} = 1 - \frac{y^2}{100}$$

$$x^2 = 64 - \frac{16y^2}{25}$$

$$x = \pm\sqrt{64 - \frac{16y^2}{25}}$$

$Q_x - P_y =$

$6 - 6$

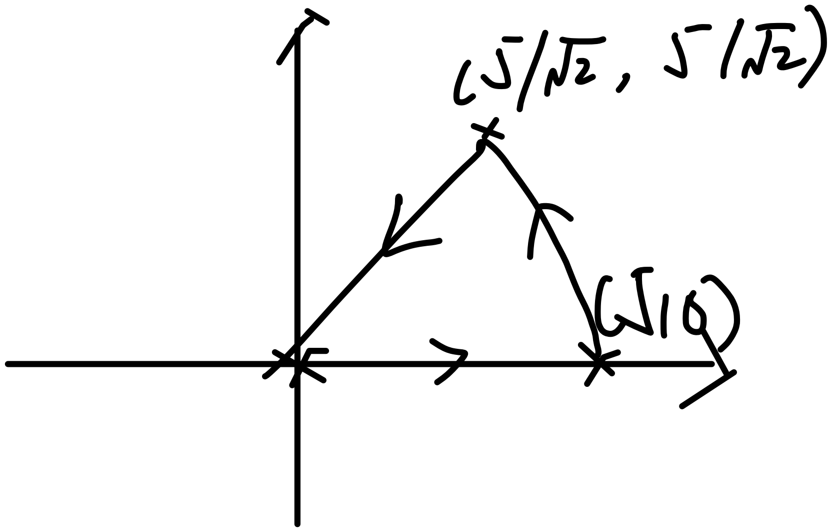
$6xy + x^2 + y^2$

$\cancel{\frac{x^2}{2}} + 6x + y^2 + 6y$

$-2y$

$\int \ln(x+z)y$

$\cancel{\frac{5x^3}{3}} - y^2 x$



$$\int_{C_1} + \int_{C_2} = \iint D A$$

$$= 0 \quad \langle -t, -t \rangle$$

$$\cancel{\langle -t, 0 \rangle}$$

$$= -\int_{C_2}$$

$$\int_{C_2} = \int_0 \qquad \int \vec{F} \cdot d\vec{r}$$

$(5/\sqrt{2}, 5/\sqrt{2})$

$e^{xy} + \sin(2x+y)$

$e^{\frac{5}{\sqrt{2}}\cdot\frac{5}{\sqrt{2}}} + \sin\left(\frac{10}{\sqrt{2}} + \frac{5}{\sqrt{2}}\right)$

$e^{\frac{25}{2}}$ $\quad 6xy + x^2 + y^2$

$(-4,0) \leftarrow (4,0)$ $\quad = 0$

$\int_P^Q$ $\quad P \to Q$ $\quad Q \to P$ $\quad 16 -$ $\quad P \to T \to Q.$

(-8) $\quad \int_P^T + \int_T^Q$ $\quad 21$ $\quad 15$ $\quad (-6)$