Lista de Fórmulas para el Primer Examen Parcial de Matemáticas III para Ingeniería

$$x = r\cos\theta \qquad r = \sqrt{x^2 + y^2}$$
$$y = rsen\theta \qquad \theta = \tan^{-1}\left(\frac{y}{x}\right)$$

$$\vec{a}\cdot\vec{b} = a_1b_1 + a_2b_2 + a_3b_3$$
$$\vec{a}\cdot\vec{b} = \left|\vec{a}\right|\left|\vec{b}\right|\cos\theta$$
$$\cos\theta = \frac{\vec{a}\cdot\vec{b}}{\left|\vec{a}\right|\left|\vec{b}\right|}$$

$$\left|\vec{a}\right| = \sqrt{{a_1}^2 + {a_2}^2 + {a_3}^2}$$
$$\hat{a} = \frac{\vec{a}}{\left|\vec{a}\right|}$$
$$\cos\alpha = \frac{a_1}{\left|\vec{a}\right|};\ \cos\beta = \frac{a_2}{\left|\vec{a}\right|};\ \cos\gamma = \frac{a_3}{\left|\vec{a}\right|}$$
$$\cos^2\alpha + \cos^2\beta + \cos^2\gamma = 1$$
$$\hat{a} = \langle\cos\alpha, \cos\beta, \cos\gamma\rangle$$

$$\vec{a}\times\vec{b} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{vmatrix}$$
$$\left|\vec{a}\times\vec{b}\right| = \left|\vec{a}\right|\left|\vec{b}\right|sen\theta$$
$$\left|\vec{a}\times\vec{b}\right| = area\_del\_parale\log ramo$$
$$\vec{a}\cdot\vec{b}\times\vec{c} = \begin{vmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{vmatrix}$$
$$\left|\vec{a}\cdot\vec{b}\times\vec{c}\right| = volumen\_del\_paralelepipedo$$

$$\vec{r} = \langle x_0, y_0, z_0\rangle + t\langle a, b, c\rangle$$
$$\begin{cases} x = x_0 + at \\ y = y_0 + bt \\ z = z_0 + ct \end{cases}$$
$$\frac{x - x_0}{a} = \frac{y - y_0}{b} = \frac{z - z_0}{c} = t$$

$$\left(\vec{r} - \vec{r}_0\right)\cdot\vec{n} = 0$$
$$a(x - x_0) + b(y - y_0) + c(z - z_0) = 0$$
$$ax + by + cz = d$$

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1;\quad Elipsoide$$
$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1;\ Hiperboloide\_una\_Hoja$$
$$-\frac{x^2}{a^2} - \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1;\ Hiperboloide\_dos\_Hojas$$

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = 0;\ Cono$$
$$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z}{c} = 0;\ Paraboloide\_Eliptico$$
$$\frac{x^2}{a^2} - \frac{y^2}{b^2} - \frac{z}{c} = 0;\ Paraboloide\_Hiperbolico$$