Line/plane through $\mathbf{p}_0$ normal to $\mathbf{n}$:

$$\mathbf{n} \cdot (\mathbf{p} - \mathbf{p}_0) = 0, \quad \mathbf{p} = (x, y) \text{ or } (x, y, z)$$

Line though $\mathbf{p}_0$ tangent to $\mathbf{v}$:

$$\mathbf{r}(t) = \mathbf{p}_0 + t\mathbf{v}, \quad t \in \mathbb{R}$$

Straight line segment from $\mathbf{p}_0$ to $\mathbf{p}_1$:

$$\mathbf{r}(t) = \mathbf{p}_0 + t(\mathbf{p}_1 - \mathbf{p}_0), \quad 0 \le t \le 1.$$

Curl and divergence:

$$\operatorname{curl} \mathbf{F} = \nabla \times \mathbf{F}, \quad \operatorname{div} \mathbf{F} = \nabla \cdot \mathbf{F}$$

$$\nabla = \frac{\partial}{\partial x}\mathbf{i} + \frac{\partial}{\partial y}\mathbf{j} + \frac{\partial}{\partial z}\mathbf{k}$$

Polar coordinates:

$$(x, y) = (r\cos\theta, r\sin\theta),$$
$$dA = r\,dr\,d\theta$$

Cylindrical coordinates:

$$(x, y, z) = (r\cos\theta, r\sin\theta, z),$$
$$dV = r\,dz\,dr\,d\theta$$

Spherical coordinates:

$$(x, y, z) = (\rho\sin\varphi\cos\theta, \rho\sin\varphi\sin\theta, \rho\cos\varphi),$$
$$dV = \rho^2\sin\varphi\,d\rho\,d\varphi\,d\theta$$

Arc length elements:

$$ds = \|\mathbf{r}'(t)\|\;dt,$$
$$\mathbf{T}\,ds = \mathbf{r}'(t)\,dt$$

Surface area elements:

$$dS = \|\mathbf{r}_u \times \mathbf{r}_v\|\;du\,dv,$$
$$\mathbf{n}\,dS = \pm\mathbf{r}_u \times \mathbf{r}_v\,du\,dv$$

Fundamental Theorem for Line Integrals:

$$f(\mathbf{p}_1) - f(\mathbf{p}_0) = \int_C \nabla f \cdot \mathbf{T}\,ds$$

Stokes'/Green's Theorem:

$$\oint_{\partial S} \mathbf{F} \cdot \mathbf{T}\,ds = \iint_S \operatorname{curl} \mathbf{F} \cdot \mathbf{n}\,dS$$

Divergence Theorem:

$$\oiint_{\partial E} \mathbf{G} \cdot \mathbf{n}\,dS = \iiint_E \operatorname{div} \mathbf{G}\,dV$$

Trig identities:

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

Trig values:

θ	0	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$
$\sin\theta$	0	$1/2$	$1/\sqrt{2}$	$\sqrt{3}/2$	1
$\cos\theta$	1	$\sqrt{3}/2$	$1/\sqrt{2}$	$1/2$	0