Geometry

Euler's Polyhedral Formula	$F+V=E+2$	F: Face V: Vertex E: Edge
Sum of interior angles of a regular polygon	$S_i=(n-2)\times 180^{\circ}$	n: Number of sides
Pythagorean theorem	$H^2=C_1^2+C_2^2$	Hypotenuse: H Leg: C_1 e C_2
Distance between two points	$\overline{AB}=\sqrt{(x_1-x_2)^2+(y_1-y_2)^2}$	ex: $A(8,2)$ e $B(4,-1)$ $\overline{AB}=\sqrt{(8-4)^2+(2+1)^2}\Leftrightarrow$ $\overline{AB}=\sqrt{16+9}\Leftrightarrow\overline{AB}=5$
Midpoints	$M\left(\frac{x_1+x_2}{2},\frac{y_1+y_2}{2}\right)$	ex: $A(2,6)$ e $B(4,-2)$ $M\left(\frac{2+4}{2},\frac{6-2}{2}\right)\Leftrightarrow M(3,2)$
Equation of a straight line	Slope–intercept form Slope: m, Y intercept: b	$y=mx+b$
	Vector Form Direction vector: $\overrightarrow{u}(u_1,u_2,u_3)$ Point(x_0,y_0,z_0)	$(x,y,z)=(x_0,y_0,z_0)+k(u_1,u_2,u_3),k\in\mathbb{R}$
	Cartesian Form Direction vector: $\overrightarrow{u}(u_1,u_2,u_3)$ Point(x_0,y_0,z_0)	$\frac{x-x_0}{u_1}=\frac{y-y_0}{u_2}=\frac{z-z_0}{u_3}$
	Parametric Form Direction vector: $\overrightarrow{u}(u_1,u_2,u_3)$ Point(x_0,y_0,z_0)	$\begin{cases}x=x_0+Ku_1\\y=y_0+Ku_2\;,k\in\mathbb{R}\\z=z_0+Ku_3\end{cases}$
Equation of a plane	Cartesian Form Normal vector: $\overrightarrow{u}(n_1,n_2,n_3)$ Point(x_0,y_0,z_0)	$n_1(x-x_0)+n_2(y-y_0)+n_3(z-z_0)=0$
	Scalar Form Normal vector: $\overrightarrow{u}(n_1,n_2,n_3)$	$n_1x+n_2y+n_3z+d=0$
Equation of a circle	Center (x_0,y_0) and radius r	$(x-x_0)^2+(y-y_0)^2=r^2$
Equation of a Sphere	Center (x_0,y_0,z_0) and radius r	$(x-x_0)^2+(y-y_0)^2+(z-z_0)^2=r^2$
Equation of an Ellipse	Center (h,k) Axis a and b	$\left(\frac{x-h}{a}\right)^2+\left(\frac{y-k}{b}\right)^2=1$

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