Distance Formula: 

Midpoint: 

Standard Equation for the Sphere 

Magnitude: 

Direction / Unit vector: 

Angle between Vectors: 

Dot Product: 

Vector Projection: 

The scalar component of ***u*** in the direction of ***v*** is the scalar 

Work: 

Cross Product: 

Magnitude of torque vector: 

Torque vector: 

Triple scalar product: 

Volume: 

Vector equation for the line ***L***: 

The distance from a Point to a line: ****

The distance from a Point to a Plane: ****

Angle between the planes: 

Arc Length: 

*Maximum height*: 

*Maximum time*: 

*Flight time*: 

*Range*: 

*Unit tangent vector*: 

*Principal unit normal vector*: 

*Binormal vector*: 

*Curvature*: 

*Torsion*: 

Acceleration vector: 

Tangential acceleration: 

Normal acceleration: 







Gradient Vector: 



Directional Derivative: 

Tangent Plane: 

Normal Line: 

Linearization: 

 has a local maximum at  if  and  at .

 has a local minimum at  if  and  at .

 has a saddle point at  if  at .

The test is inconclusive at  if  at .

Lagrange Multipliers: 

Volume: 



Average values of  over *R* 

Average value of F over D 



Cartesian Integrals into Polar: 



 







***Jacobian***: 











Divergence 







 

