SUMMARY OF SECTION 3.5

THE EQUATION OF THE PLANE THROUGH (x_0, y_0, z_0) PERPENDICULAR TO (A, B, C) IS $\underbrace{A(x-x_0)+B(y-y_0)+C(z-z_0)=0}_{\text{POINT-NORMAL FORM}}$

IF A, B, C AND d ARE NOT ALL ZERO, THEN THE GRAPH OF $Ax+By+Cz=d$ IS A PLANE PERPENDICULAR TO (A, B, C). THIS IS CALLED THE <u>GENERAL FORM</u> OF THE EQUATION OF A PLANE.

LET $\vec{N}=(A,B,C)$, $\vec{R}=(x,y,z)$ AND $\vec{R}_0=(x_0,y_0,z_0)$. $\vec{N}\cdot(\vec{R}-\vec{R}_0)=0$ IS CALLED THE <u>VECTOR FORM</u> OF THE EQUATION OF A PLANE.

THE LINE THROUGH (x_0, y_0, z_0) PARALLEL TO (A, B, C) IS THE SET OF POINTS $(x_0+AT,\ y_0+BT,\ z_0+CT)$ WHERE T ASSUMES EVERY REAL NUMBER.

THE EQUATIONS $x=x_0+AT$, $y=y_0+BT$, $z=z_0+CT$ $(-\infty < T < \infty)$ ARE CALLED <u>PARAMETRIC EQUATIONS</u> FOR THE LINE.

LET $\vec{V}=(A,B,C)$, $\vec{R}=(x,y,z)$ AND $\vec{R}_0=(x_0,y_0,z_0)$. $\vec{R}=\vec{R}_0+T\vec{V}$ $(-\infty < T < \infty)$ IS CALLED THE <u>VECTOR FORM</u> OF THE EQUATION OF A LINE.