$$\begin{bmatrix} x & y & z \end{bmatrix} \begin{bmatrix} A & D & G \\ B & E & H \\ C & F & I \end{bmatrix}$$

$$\begin{bmatrix} x & y & z \end{bmatrix} \begin{bmatrix} A & D & G \\ B & E & H \\ C & F & I \end{bmatrix} = \begin{bmatrix} Ax + By + Cz & Dx + Ey + Fz & Gx + Hy + Iz \end{bmatrix}$$

$$\begin{bmatrix} Ax + By + Cz & Dx + Ey + Fz & Gx + Hy + Iz \end{bmatrix}$$

$$\begin{bmatrix} Ax + By + Cz & Dx + Ey + Fz & Gx + Hy + Iz \end{bmatrix} =$$

$$Ax + By + Cz =$$

$$Dx + Ey + Fz =$$

$$Hx + Gy + Iz =$$

$A =$

$B =$

$C =$

$D =$

$E =$

$F =$

$G =$

$H =$

$I =$

$$\begin{bmatrix} A & D & G \\ B & E & H \\ C & F & I \end{bmatrix}$$