5. $4y = 2(x+5z)$ $(1, 8, 3)$ x_0, y_0, z_0

$4y = 2x + 10z$

$\underbrace{4y - 2x - 10z}_{f} = \underbrace{0}_{\text{zero}}$

① $f_x = -2$ ② $f_x = -2$ ③ $f_x(x-x_0) + f_y(y-y_0) + f_z(z-z_0) = 0$

$f_y = 4$ $f_y = 4$ $-2(x-1) + 4(y-8) - 10(z-3) = 0$

$f_z = -10$ $f_z = -10$ $-2x + 2 + 4y - 32 - 10z + 30 = 0$

$-2x + 4y - 10z = 0$

$-x + 2y - 5z = 0$

6. $\underbrace{x^2 - 2y^2 + 7z^2}_{f} = \underbrace{0}_{\text{zero}}$ $(1, 2, 1)$ x_0, y_0, z_0

① $f_x = 2x$ ② $f_x = 2(1) = 2$ ③ $f_x(x-x_0) + f_y(y-y_0) + f_z(z-z_0) = 0$

$f_y = -4y$ $f_y = -4(2) = -8$ $2(x-1) - 8(y-2) + 14(z-1) = 0$

$f_z = 14z$ $f_z = 14(1) = 14$ $2x - 2 - 8y + 16 + 14z - 14 = 0$

$2x - 8y + 14z = 0$

$x - 4y + 7z = 0$

④ $\frac{x-x_0}{f_x} = \frac{y-y_0}{f_y} = \frac{z-z_0}{f_z}$

$\frac{x-1}{2} = \frac{y-2}{-8} = \frac{z-1}{14}$