

$$8. \quad \rho(x, y, z) = K$$

$$\textcircled{1}: 3x + 6y + 2z = 24, \quad x=0, \quad y=0, \quad z=0$$

$$m = \int_{x=0}^{x=8} \int_{y=0}^{y=4-\frac{1}{2}x} \int_{z=0}^{z=12-\frac{3}{2}x-3y} K \, dz \, dy \, dx$$

$$\frac{z's}{3x + 6y + 2z = 24}$$

$$\partial z = 24 - 3x - 6y$$

$$z = 12 - \frac{3}{2}x - 3y$$

$$m = K \int_{x=0}^{x=8} \int_{y=0}^{y=4-\frac{1}{2}x} \left[ z \right]_{z=0}^{z=12-\frac{3}{2}x-3y} dy \, dx$$

$$\frac{y's}{3x + 6y + 2z = 24}$$

$$3x + 6y + 2(0) = 24$$

$$3x + 6y = 24$$

$$6y = 24 - 3x$$

$$y = 4 - \frac{1}{2}x$$

$$m = K \int_{x=0}^{x=8} \int_{y=0}^{y=4-\frac{1}{2}x} \left( 12 - \frac{3}{2}x - 3y - 0 \right) dy \, dx$$

$$y = 4 - \frac{1}{2}x$$

$$\frac{x's}{3x + 6y + 2z = 24}$$

$$3x + 6y + 2z = 24$$

$$3x + 6(0) + 2(0) = 24$$

$$3x = 24$$

$$x = 8$$

$$m = K \int_{x=0}^{x=8} \left[ 12y - \frac{3}{2}xy - \frac{3}{2}y^2 \right]_{y=0}^{y=4-\frac{1}{2}x} dx$$

$$m = K \int_{x=0}^{x=8} \left[ 12(4 - \frac{1}{2}x) - \frac{3}{2}x(4 - \frac{1}{2}x) - \frac{3}{2}(4 - \frac{1}{2}x)^2 \right] dx$$

$$m = K \int_{x=0}^{x=8} \left[ 48 - 6x - 6x + \frac{3}{4}x - \frac{3}{2}(16 - 4x + \frac{1}{4}x^2) \right] dx$$

$$m = K \int_{x=0}^{x=8} \left[ 48 - 12x + \frac{3}{4}x - 24 + 6x - \frac{3}{8}x^2 \right] dx$$

$$m = K \int_{x=0}^{x=8} \left[ 24 - 6x + \frac{3}{4}x - \frac{3}{8}x^2 \right] dx$$

$$m = K \int_{x=0}^{x=8} \left[ 24 - \frac{21}{4}x - \frac{3}{8}x^2 \right] dx$$