5) $\int_1^3 \int_0^x \int_0^{y-1} (2x)\, dz \cdot dy\, dx$

$\int_0^{y-1} 2x \cdot dz \quad \left[2xz \right]_0^{y-1} \quad \left[2x\,[y-1] \right] - \left[2x \cdot 0 \right]$

$2x[y-1] \quad 2xy - 2x$

$\int_0^x 2xy - 2x \cdot dy = \left[2x\frac{y^2}{2} - 2xy \right]_0^x$

$\left[2x\frac{x^2}{2} - 2x \cdot x \right] - [0]$

$\left[\frac{2x^3}{2} - 2x^2 \right]$

$\int_1^3 x^3 - 2x^2\, dx = \left[\frac{x^4}{4} - \frac{2x^3}{3} \right]_1^3$

$\left[\frac{3^4}{4} - 2\frac{(3)^3}{3} \right] - \left[\frac{1^4}{4} - 2 \cdot \frac{1^3}{3} \right]$

$\left[\frac{81}{4} - \frac{54}{3} \right] - \left[\frac{1}{4} - \frac{2}{3} \right]$

$\frac{81}{4} - \frac{54}{3} - \frac{1}{4} + \frac{2}{3} = \frac{80}{4} - \frac{52}{3} = 2{,}666$

6,75

6) $\int_1^6 \int_1^2 \int_1^2 \left[\frac{x^{1/2} \cdot y^3}{z^2}\right] dz \cdot dy \cdot dx$

$\int_1^4 \int_1^2 \int_1^2 \left[\frac{x^{1/2} \cdot y^3}{z^2}\right] \cdot dz$

$\int_1^2 x^{1/2} \cdot y^3 \cdot z^{-2}$

$\left[x^{1/2} \cdot y^3 \cdot \frac{z^{-1}}{-1}\right]_1^2 \left[x^{1/2} \cdot y^3 \cdot \frac{2^{-1}}{-1}\right] - \left[x^{1/2} \cdot y^3 \cdot \frac{1^{-1}}{-1}\right]$

$\left[x^{1/2} \cdot y^3 \frac{\frac{1}{2}}{-1}\right] = \left[x^{1/2} \cdot y^3 \frac{-1}{2}\right] - \left[x^{1/2} \cdot y^3 \cdot \frac{1}{-1}\right]$

$\left[x^{1/2} \cdot y^3 \cdot \frac{-1}{2}\right] - \left[x^{1/2} \cdot y^3 \cdot -1\right]$

$x^{1/2} \cdot y^3 \frac{-1}{2} - x^{1/2} \cdot -y^3 \cdot +1 \Rightarrow \left[\frac{1}{2} x^{1/2} \cdot y^3\right]$

$\int_1^2 \left[\frac{1}{2} x^{1/2} y^3\right] \cdot dy \left[\frac{1}{2} x^{1/2} \frac{y^4}{4}\right]_1^2$

$\left[\frac{1}{2} \cdot x^{1/2} \frac{2^4}{4}\right] - \left[\frac{1}{2} x^{1/2} \frac{1^4}{4}\right]$

$$\left[\frac{1}{3}x^{1/2}\cdot\frac{16}{4}\right]-\left[\frac{1}{2}x^{1/2}\cdot\frac{1}{4}\right]$$

$$\left[2x^{1/2}\right]-\left[\frac{1}{8}x^{1/2}\right]$$

$$2x^{1/2}-\frac{1}{8}x^{1/2}\qquad\frac{16x^{1/2}-x^{1/2}}{8}=\frac{15x^{1/2}}{8}$$

$$\int_1^4\frac{15x^{1/2}}{8}\,dx\left[\frac{15}{8}\cdot\frac{x^{3/2}}{\frac{3}{2}}\right]_1^4$$

$$\left[\frac{15}{8}\cdot\frac{4^{3/2}}{\frac{3}{2}}\right]-\left[\frac{15}{8}\cdot\frac{1^{3/2}}{\frac{3}{2}}\right]$$

$$\left[\frac{15}{8}\cdot\frac{8}{\frac{3}{2}}\right]-\left[\frac{15}{8}\cdot\frac{1}{\frac{3}{2}}\right]=\boxed{8.74}$$