(5) $\int_0^2 \int_0^{z^2} \int_0^{y-z} (2x-y)\,dx\,dy\,dz$

$= \int_0^2 \int_0^{z^2} \left[x^2 - yx\right]_0^{y-z} dy\,dz$

$= \int_0^2 \int_0^{z^2} \cancel{y^2} - 2yz + z^2 - \cancel{y^2} + yz \;dy\,dz$

$= \int_0^2 \int_0^{z^2} z^2 - yz \;dy\,dz$

$= \int_0^2 \left[z^2 y - \frac{1}{2} y^2 z\right]_0^{z^2} dz = \int_0^2 z^4 - \frac{1}{2} z^5\,dz$

$= \left[\frac{1}{5} z^5 - \frac{1}{12} z^6\right]_0^2 = \frac{32}{5} - \frac{64}{12} = 32\left(\frac{1}{5} - \frac{1}{6}\right) = \frac{32}{30} = \boxed{\frac{16}{15}}$

(6) $\iiint_E x\,dV \quad x = 4y^2 + 4z^2 \quad x = 4 \quad x \in [4y^2+4z^2, 4]$

$E = \{(x,y,z) \mid (y,z) \in D \wedge x \in [4y^2+4z^2, 4]\}$

$\iint_D \int_{4y^2+4z^2}^4 x\,dx\,dA = \iint_D \left[\frac{1}{2}x^2\right]_{4y^2+4z^2}^4 dA = \iint_D 8 - 8(y^2+z^2)^2\,dA$

$f(y,z) = 8 - 8(y^2+z^2)^2 = 8 - 8(r^2)^2 \qquad 0 = 8 - 8(r^2)^2$

$r^4 = 1$

$D = \{(r,\theta) \mid \theta \in [0, 2\pi] \wedge r \in [0,1]\} \quad r = 1 \quad [0,1] \quad \theta \in [0, 2\pi]$

$\int_0^{2\pi} \int_0^1 8r - 8r^5\,dr\,d\theta = \int_0^{2\pi} d\theta \int_0^1 8r - 8r^5\,dr = 2\pi \int_0^1 8r - 8r^5\,dr$

$= 2\pi\left[4r^2 - \frac{4}{3}r^6\right]_0^1 = 2\pi\left[4 - \frac{4}{3}\right] = 4\pi\left[2 - \frac{2}{3}\right] = 4\pi\left[\frac{4}{3}\right] = \boxed{\frac{16\pi}{3}}$