14.19

tisdag 3 januari 2023 05:19

Sz (14.14)

$$x_T = \frac{1}{m}\int_K x\,dm \qquad x_T = \frac{15}{76\pi}\int_K x\,dm \qquad r=4 \quad h=2$$

$$m = \int_K dm = \int_K \rho\,dV \qquad r_1(x) = \frac{1}{2}x$$

$$\frac{15}{76\pi}\cdot\int_0^2 x\left(10-x^2\right)\cdot \pi\,\tfrac{1}{4}x^2\,dx = \frac{15}{76\cdot 4}\cdot\int_0^2 x^3\left(10-x^2\right)dx =$$

$$= \frac{15}{76\cdot 4}\left[10\,\frac{x^4}{4} - \frac{x^6}{6}\right]_0^2 = \frac{15}{76\cdot 4}\left(10\cdot 4 - \frac{2^5}{3}\right) = \frac{3\cdot 5}{76\cdot 4}\left(3\cdot 40\cdot 4 - 4\cdot 2^3}{3}\right) =$$

$$= \frac{5}{19\cdot 2^4}\cdot\left(2\left(3\cdot 5-4\right)\right) = \frac{5}{38}\cdot 11 = \frac{55}{38}\ 1.e$$