

① Find the surface area of the torus (donut)

HW
53

$$T = \{(x, y, z) \mid (r - 7)^2 + (z + 1)^2 = 9\}.$$

② Find the surface area of the ellipsoid $E = \{(x, y, z) \mid (\frac{x}{2})^2 + (\frac{y}{3})^2 + (\frac{z}{4})^2 = 1\}$.

Hint: use "stretched" spherical coordinates.

③ Find the surface area of $S = \{(x, y, z) \mid \langle x, y, z \rangle = \langle u^2 - v^2, u^2 + v^2, uv \rangle$
& $0 \leq v \leq u \leq 5\}$.