

Calculus 114 – Homework 3

Please take your homework solutions to room SA144, Ali Adalı's office
on **May 14, 2008 Wednesday** before recitation hour.

Ali Adalı will solve the homework problems on the recitation hour that day.

It is highly recommended that you also solve the routine problems from Thomas's Calculus. Do not wait until the final exam week!

Q-1) Find the volume of the region bounded from above by $x^2 + y^2 + z^2 = R^2$ and from below by $z = h$, where $0 \leq h \leq R$.

Q-2) Find the volume of the region bounded from above by $x^2 + y^2 + z^2 = 4R^2$, from the sides by $x^2 + y^2 - 2Ry = 0$ and from below by $z = h$, where $0 \leq h \leq 2R$.

Q-3) Let D be the region bounded by the cone $x^2 + y^2 = z^2$ for $0 \leq z \leq 2$. Evaluate

$$\iiint_D \sqrt{x^2 + y^2 + z^2} \, dx \, dy \, dz.$$

Q-4) Evaluate

$$\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{x^2+y^2}} (1+y) \, dz \, dy \, dx.$$

Q-5) Find the 4-volume of the 4-ball $x^2 + y^2 + z^2 + w^2 \leq R^2$ in \mathbb{R}^4 , where $0 < R$.

Please forward any comments or questions to sertoz@bilkent.edu.tr