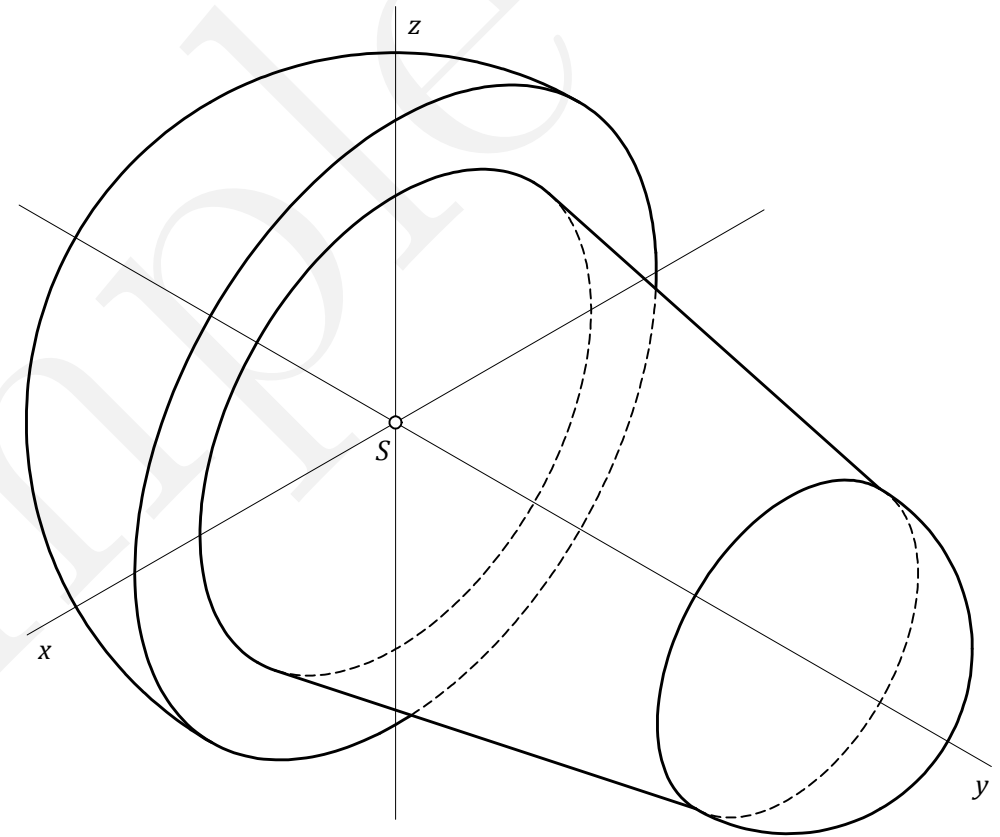
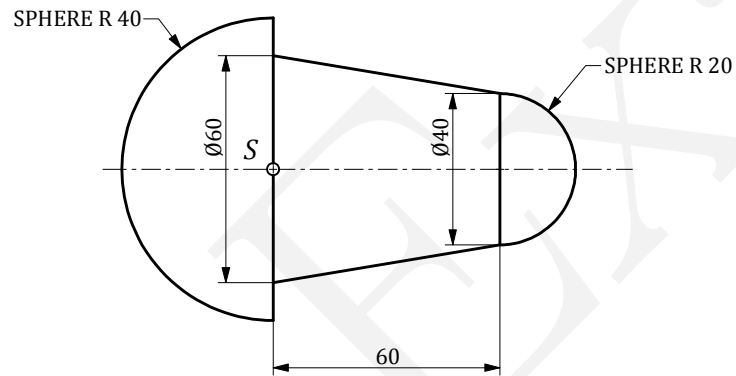
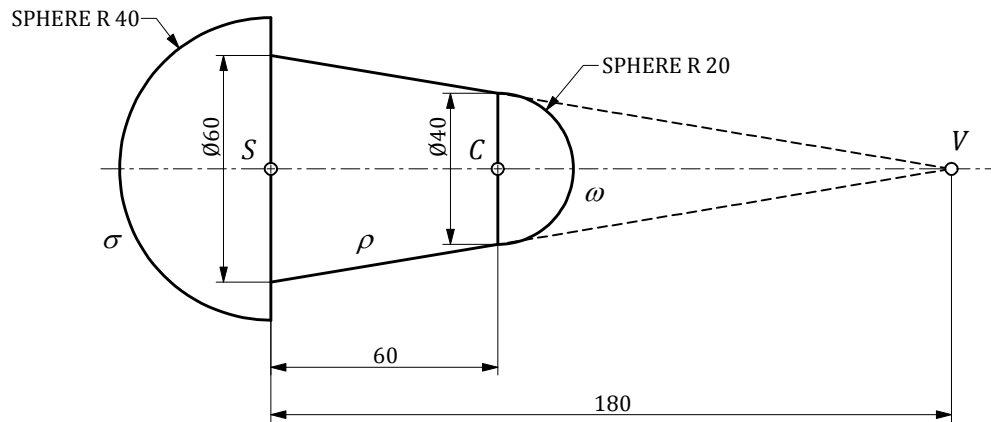


A	CONSTRUCTIVE GEOMETRY					E01A021	
Surname							
First name							
Date	Examiner			Grade			
Score	1	2	3	4	5	6	Total

1. Construct the rotary solid given by technical drawing in technical isometry. Point S lies at origin and axis of revolution of the solid is identical with y -axis of coordinate system.



2. Determine analytically the solid drawn in example 1.



The solid is determined by the following areas.

- Inner area of left hemisphere σ given by centre $(S = (0, 0, 0))$ and radius 40 mm:

$$y \geq -\sqrt{40^2 - x^2 - z^2}$$

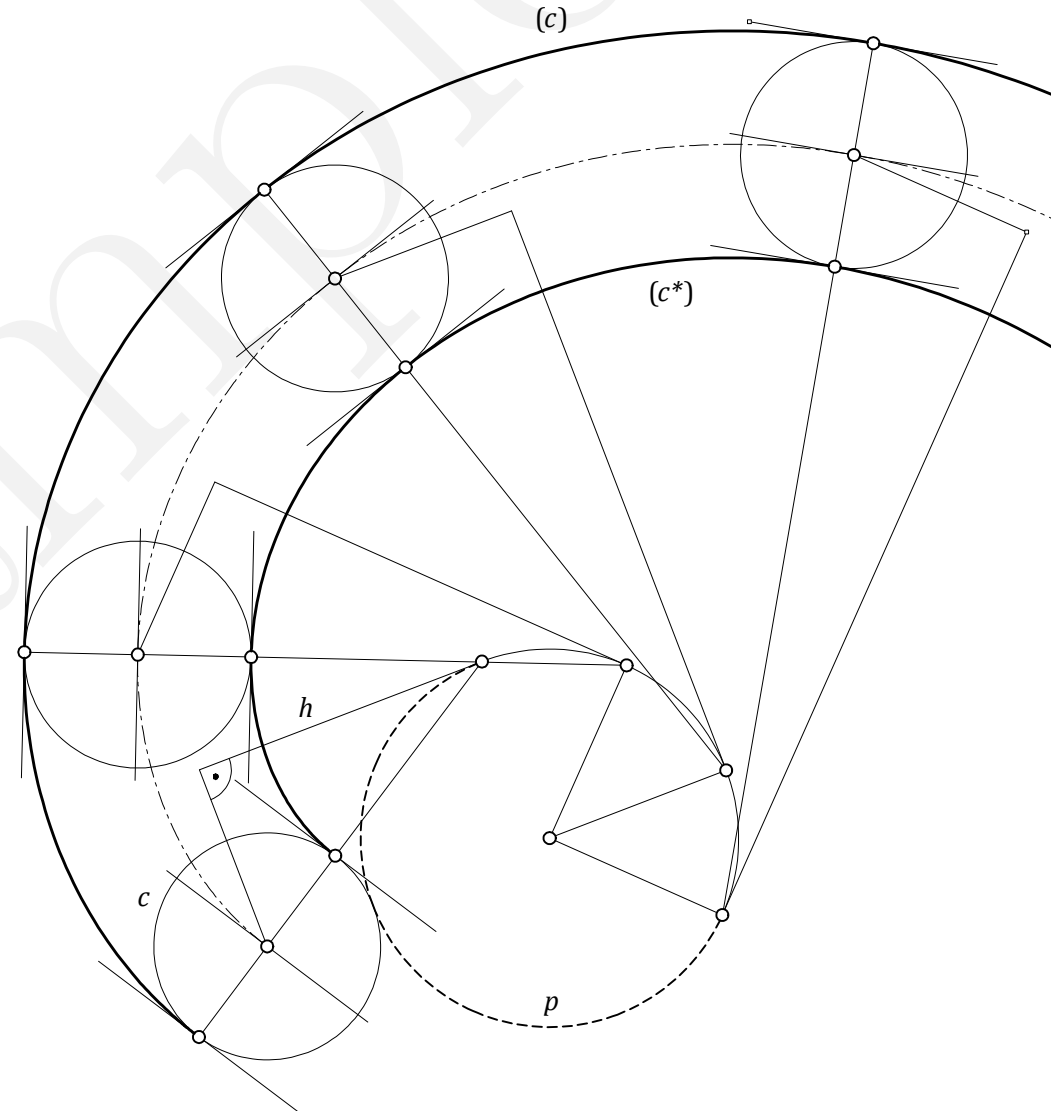
- Inner area of truncated cone of revolution ρ given by vertex $V = (0, 180, 0)$, semiaxes $a = c = 30$, $a \parallel x, c \parallel z$ and altitude $b = 180$:

$$\frac{x^2}{30^2} + \frac{(y - 180)^2}{180^2} + \frac{z^2}{30^2} \leq 0, \quad y \in [0, 60]$$

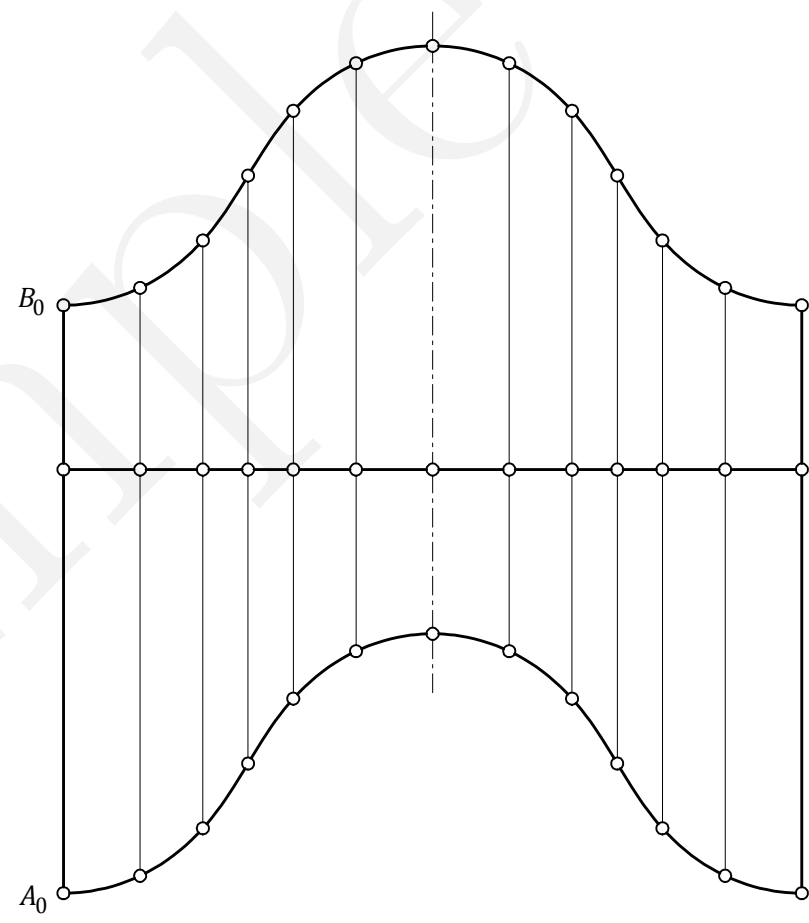
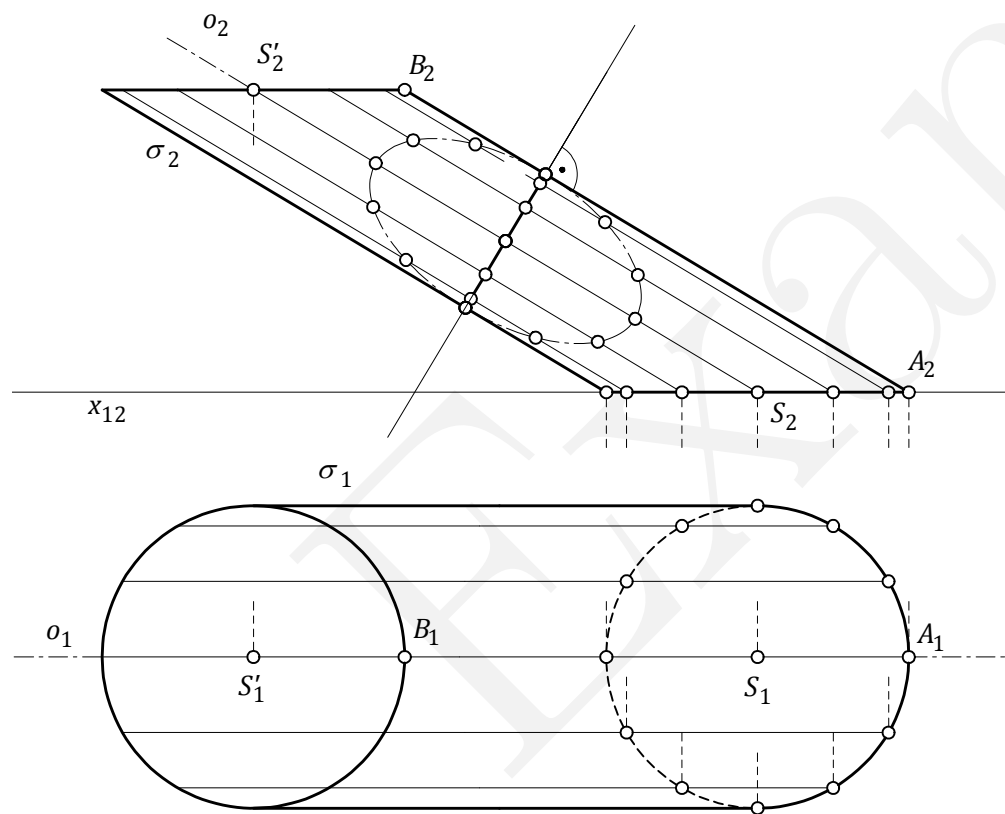
- Inner area of right hemisphere ω given by centre $C = (0, 60, 0)$ and radius 20 mm:

$$y \leq \sqrt{20^2 - x^2 - z^2}$$

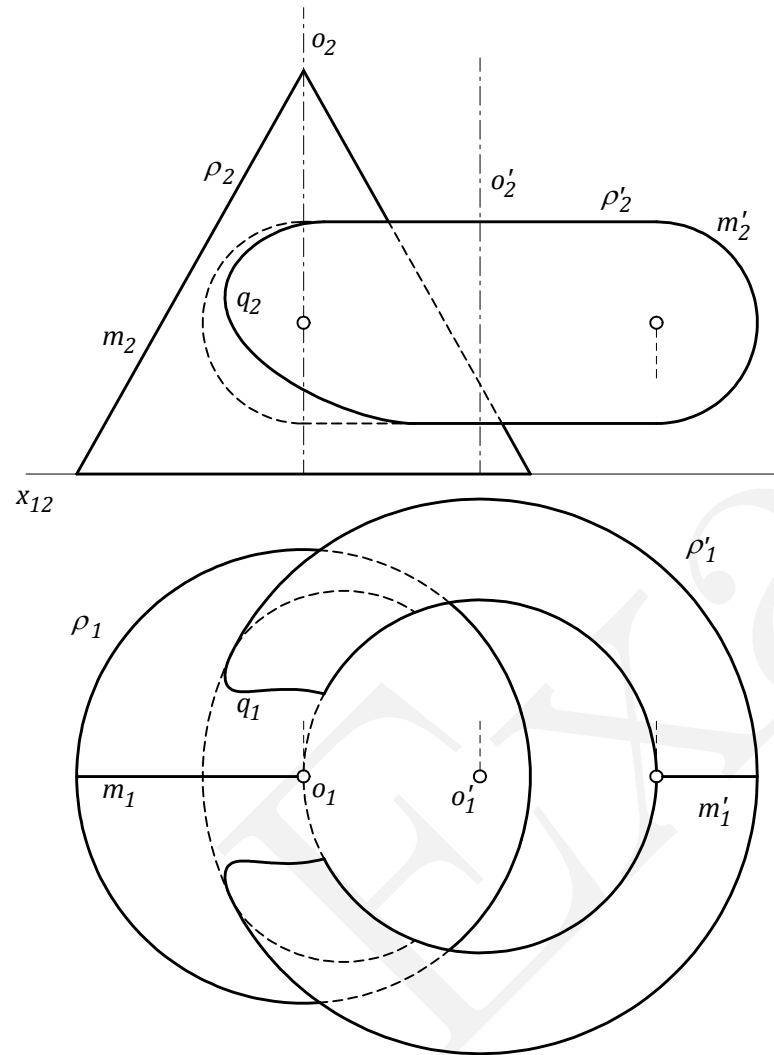
3. Involute motion is given by fixed centrode p and moving centrode h . Considering the continuous part of fixed centrode only, construct three new positions of moving circle c . Construct points of contact between circle c and its envelope (c) at all positions and sketch the envelope (c) .



4. Construct the development of oblique cylinder σ .



5. Two surfaces of revolution $\sigma = (m, o)$ and $\sigma' = (m', o')$ are given. Using Monge projection, construct intersection curve $q = \sigma \cap \sigma'$. Indicate the visibility.



6. Helicoidal surface $\sigma = (k, o, v_0, \text{right-handed})$ is given. Using Monge projection, construct the right principal half-meridian m of helicoidal surface σ .

