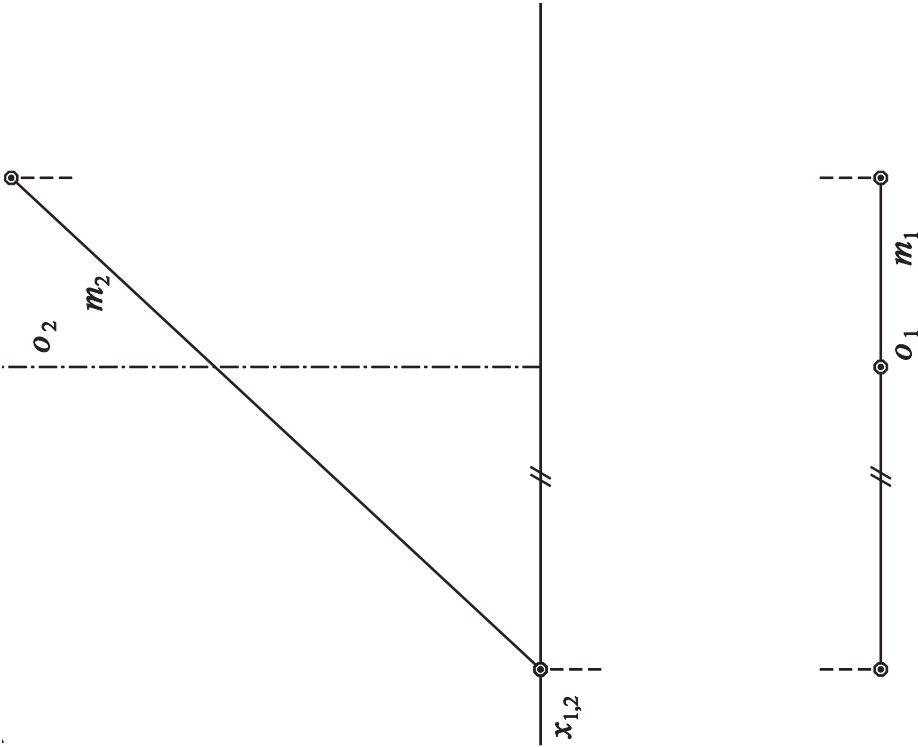
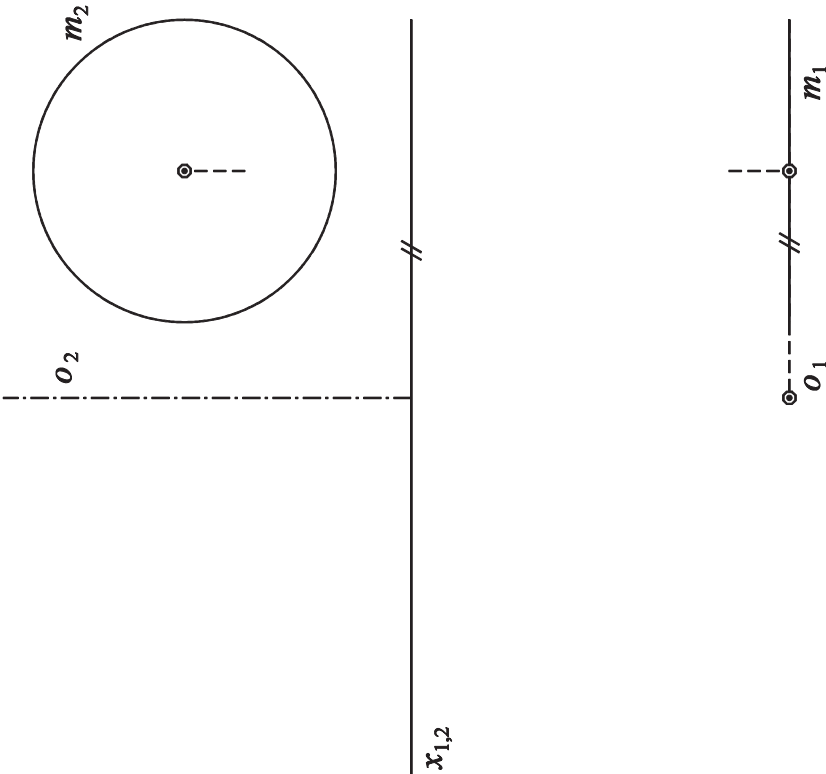


# 5. Surfaces of revolution

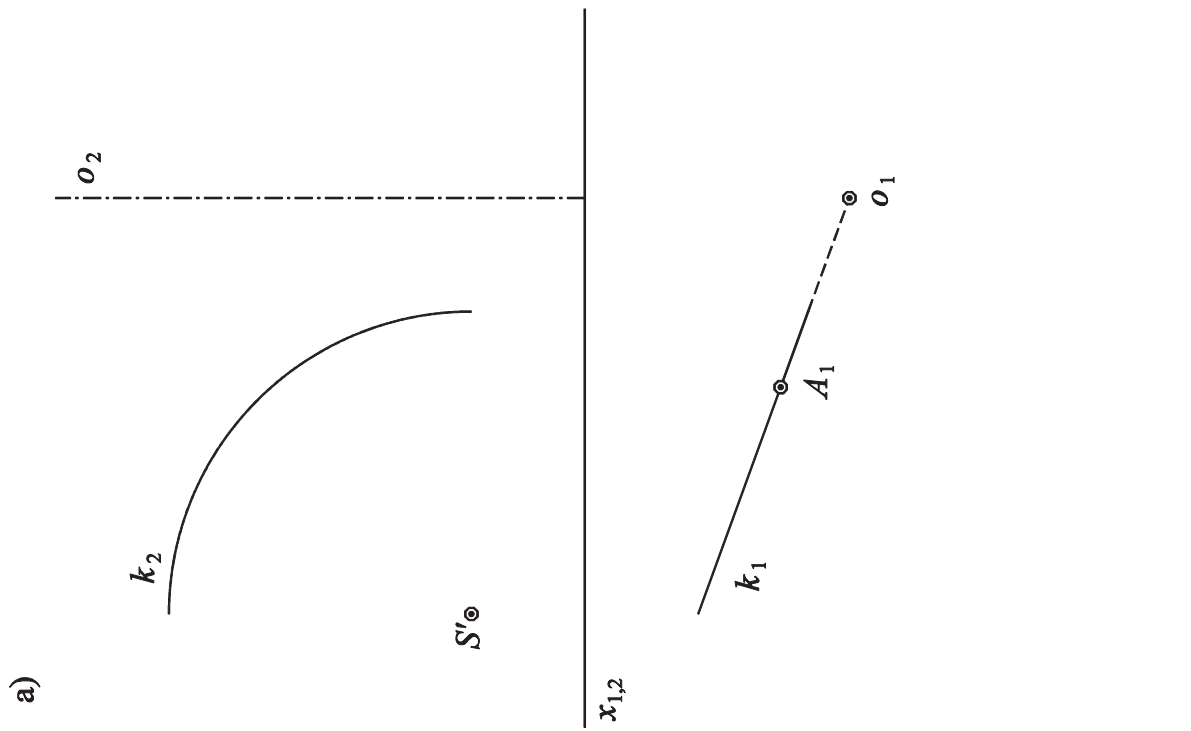
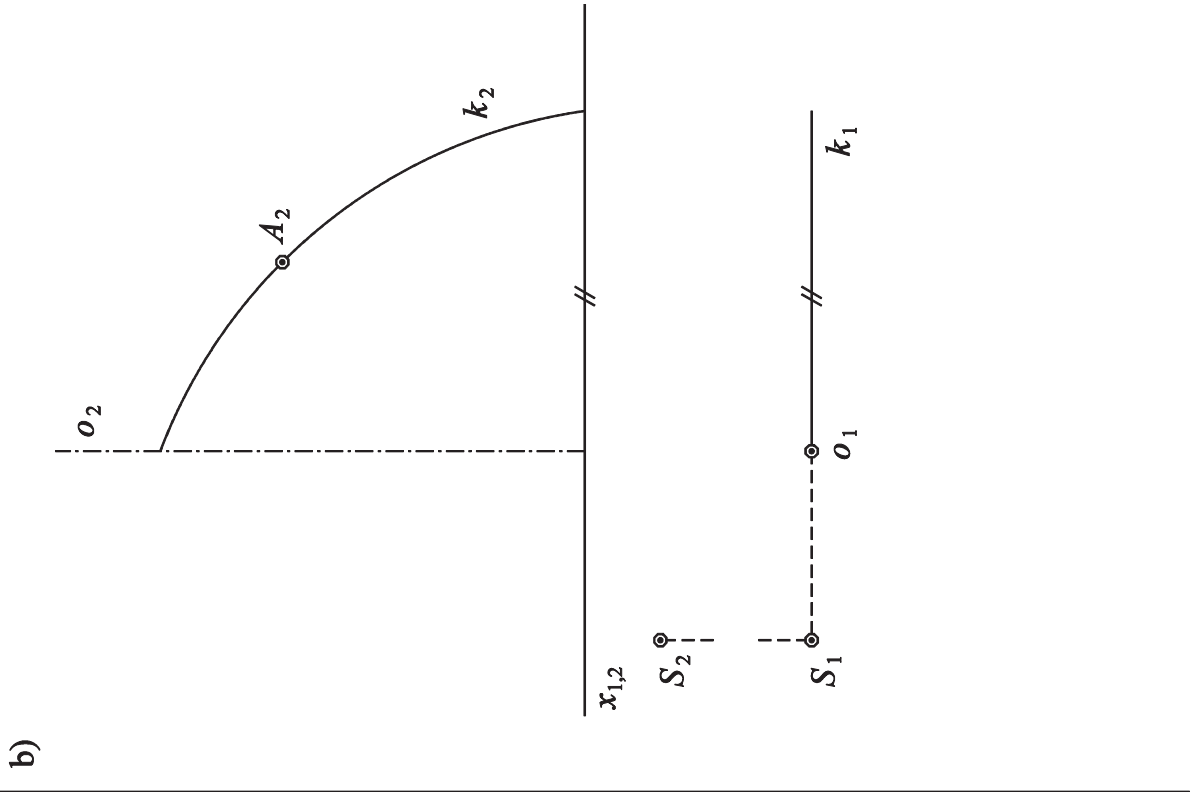
5.1. Surface of revolution (axis  $o$ , principal half-meridian  $m$ ) is given. Using Monge projection, construct the top view and the front view of the surface.



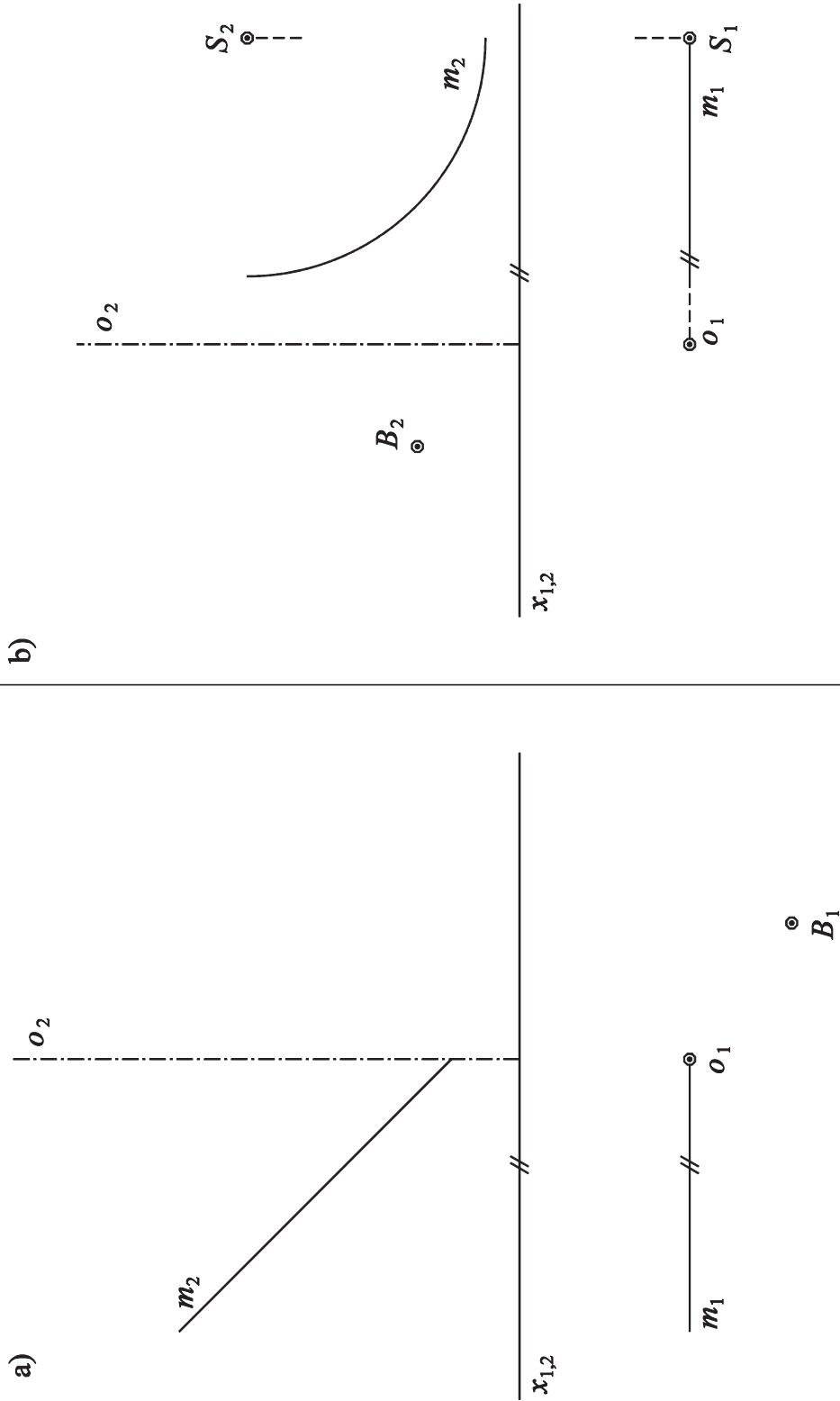
5.2. Surface of revolution (axis  $o$ , principal half-meridian  $m$ ) is given. Using Monge projection, construct the top view and the front view of the surface.



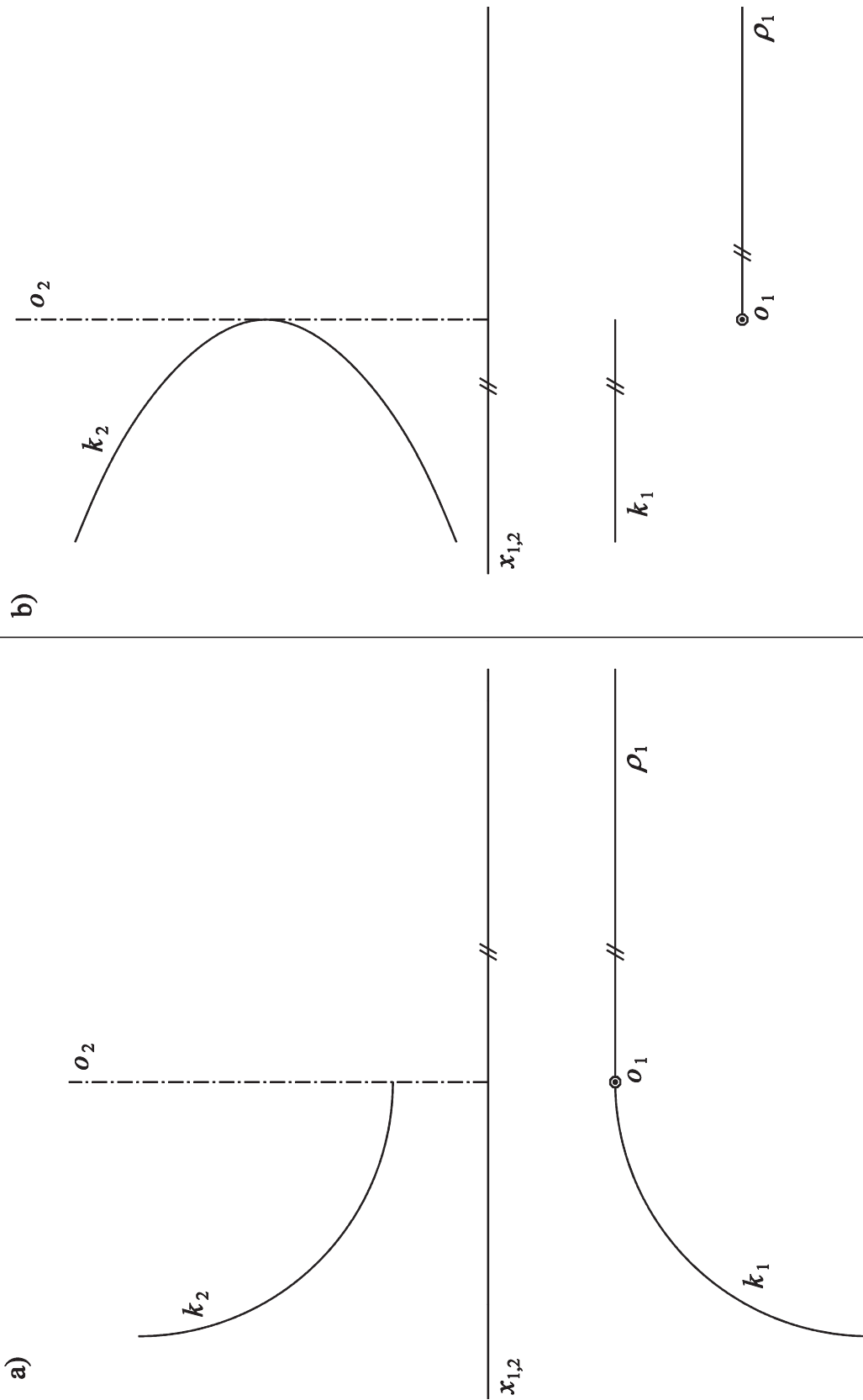
- 5.3. Surface of revolution (axis  $o$ , generating curve  $k$ ) is given. Using Monge projection
- construct tangent plane  $\tau$  at point  $A \in k$ ,
  - construct tangent plane  $\tau$  and normal line  $n$  at point  $A \in k$ .



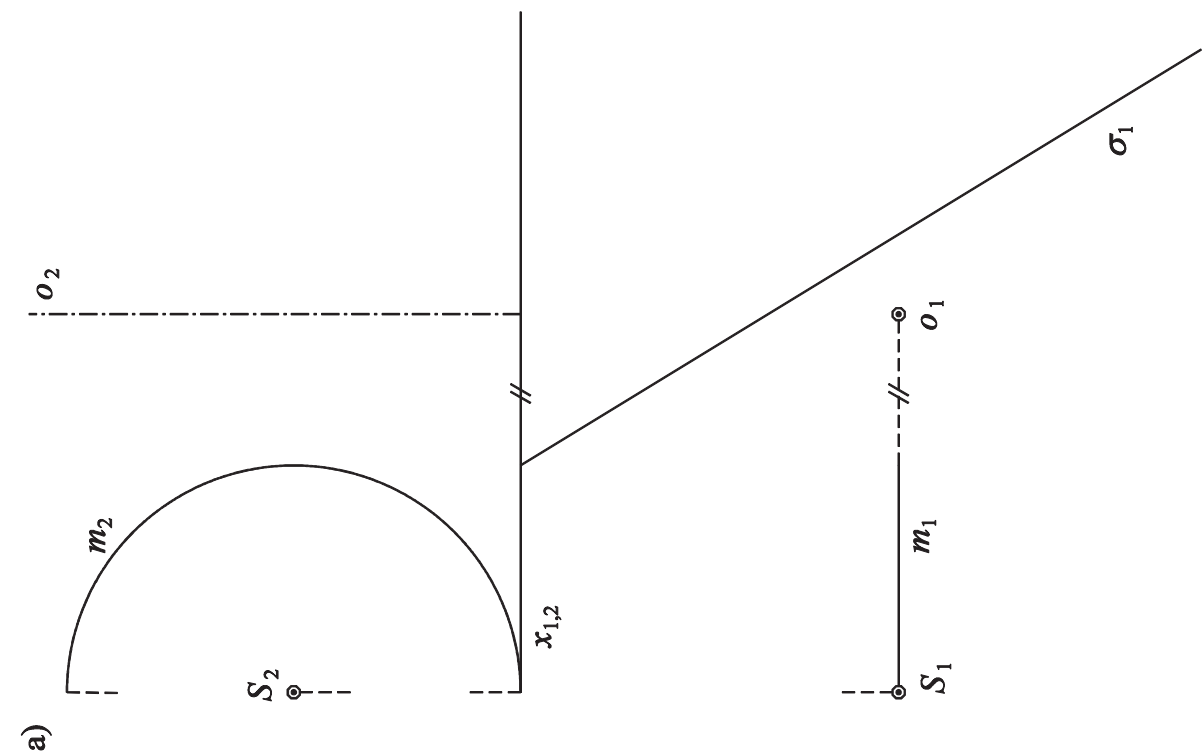
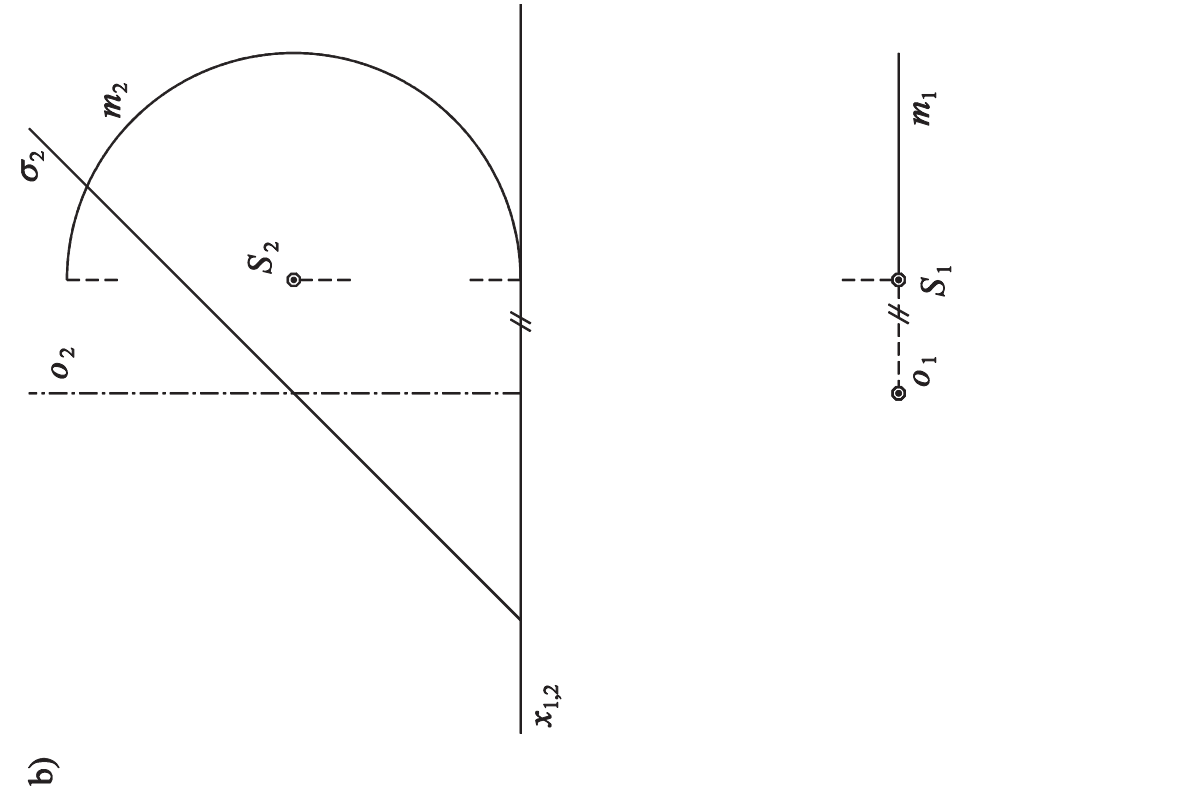
5.4. Surface of revolution (axis  $o$ , principal half-meridian  $m$ ) is given. Using Monge projection construct a missing view of point  $B$ . Construct normal line  $n$  at point  $B$ .



5.5. Surface of revolution (axis  $o$ , generating curve  $k$ ) is given. Using Monge projection construct its principal half-meridian  $m$  in the given half-plane  $\rho$ .

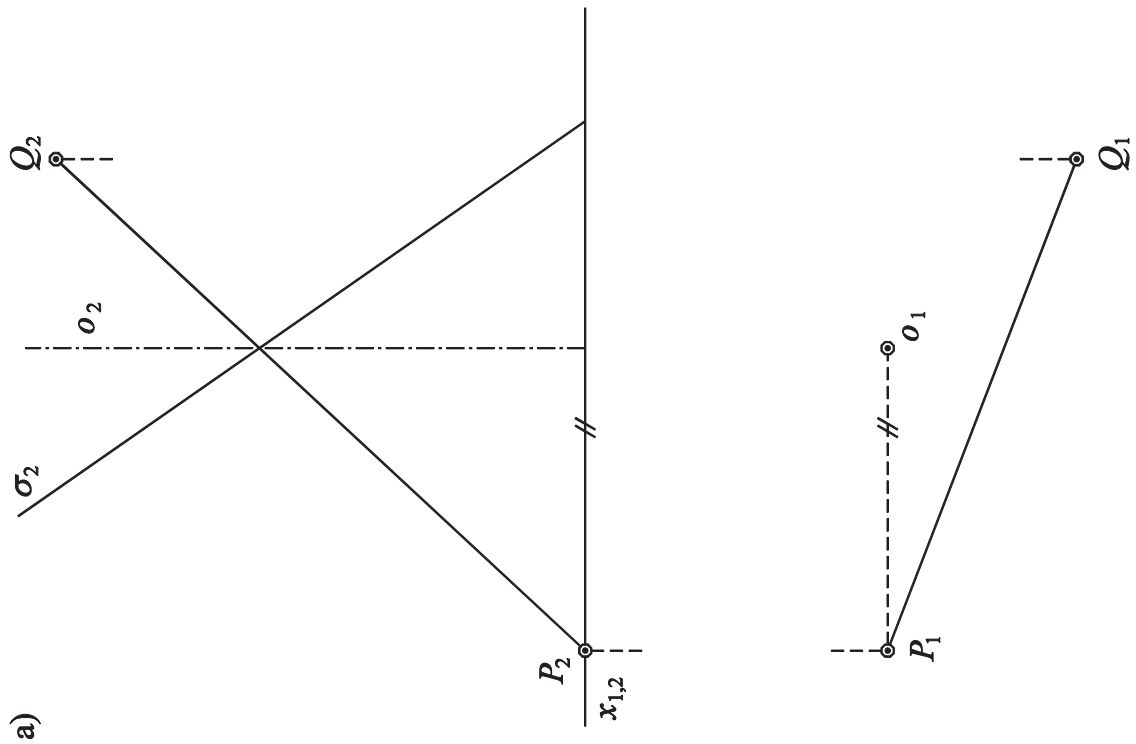
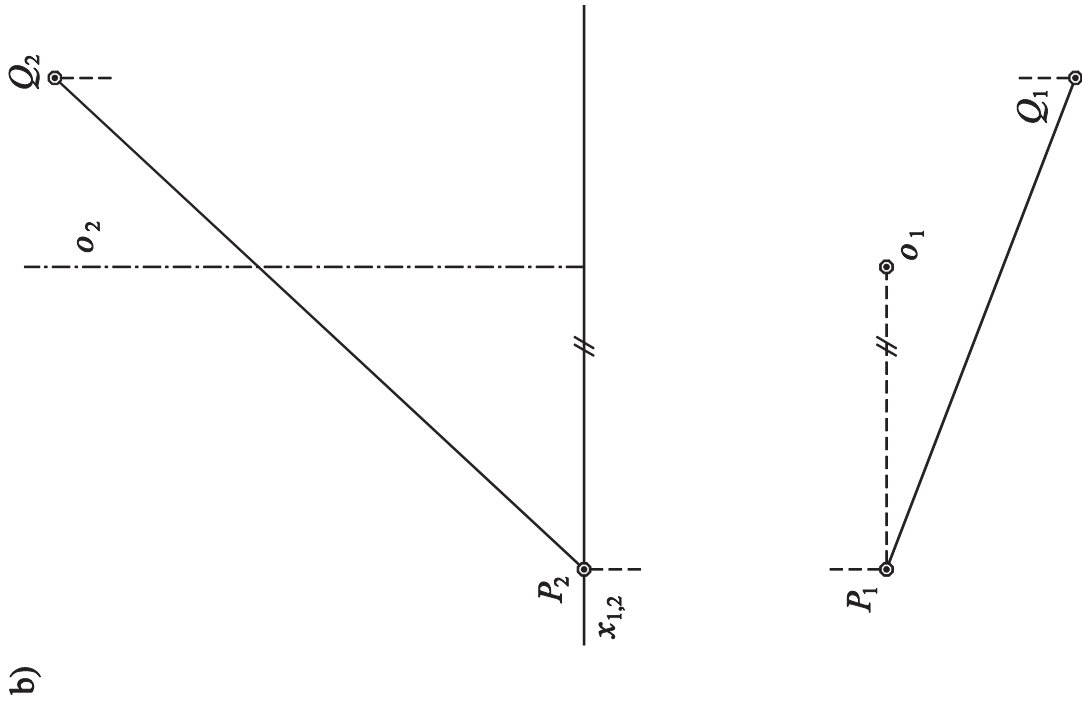


5.6. Surface of revolution (axis  $o$ , principal half-meridian  $m$ ) is given. Using Monge projection construct intersection curve  $p$  of the surface and the given plane  $\sigma$ . Construct normal line  $n$  at point  $M \in p$ ,  $z_M = 10$ .

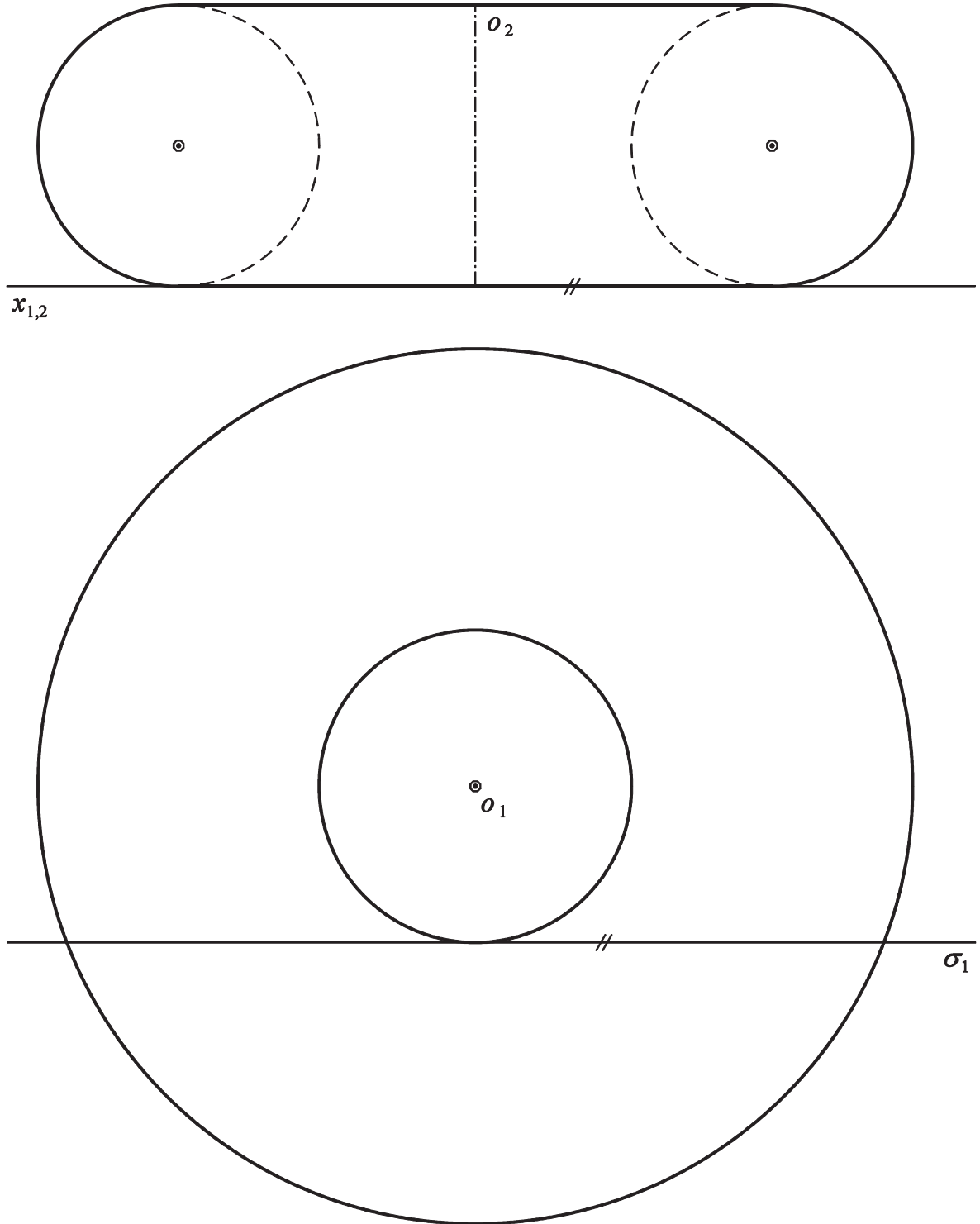


5.7. Surface of revolution (axis  $o$ , generating straight line segment  $PQ$ ) is given. Using Monge projection

- construct intersection curve  $p$  of the surface of revolution and the given plane  $\sigma$ ,
- construct the top view and the front view of the surface, write the name of the surface and its equation.

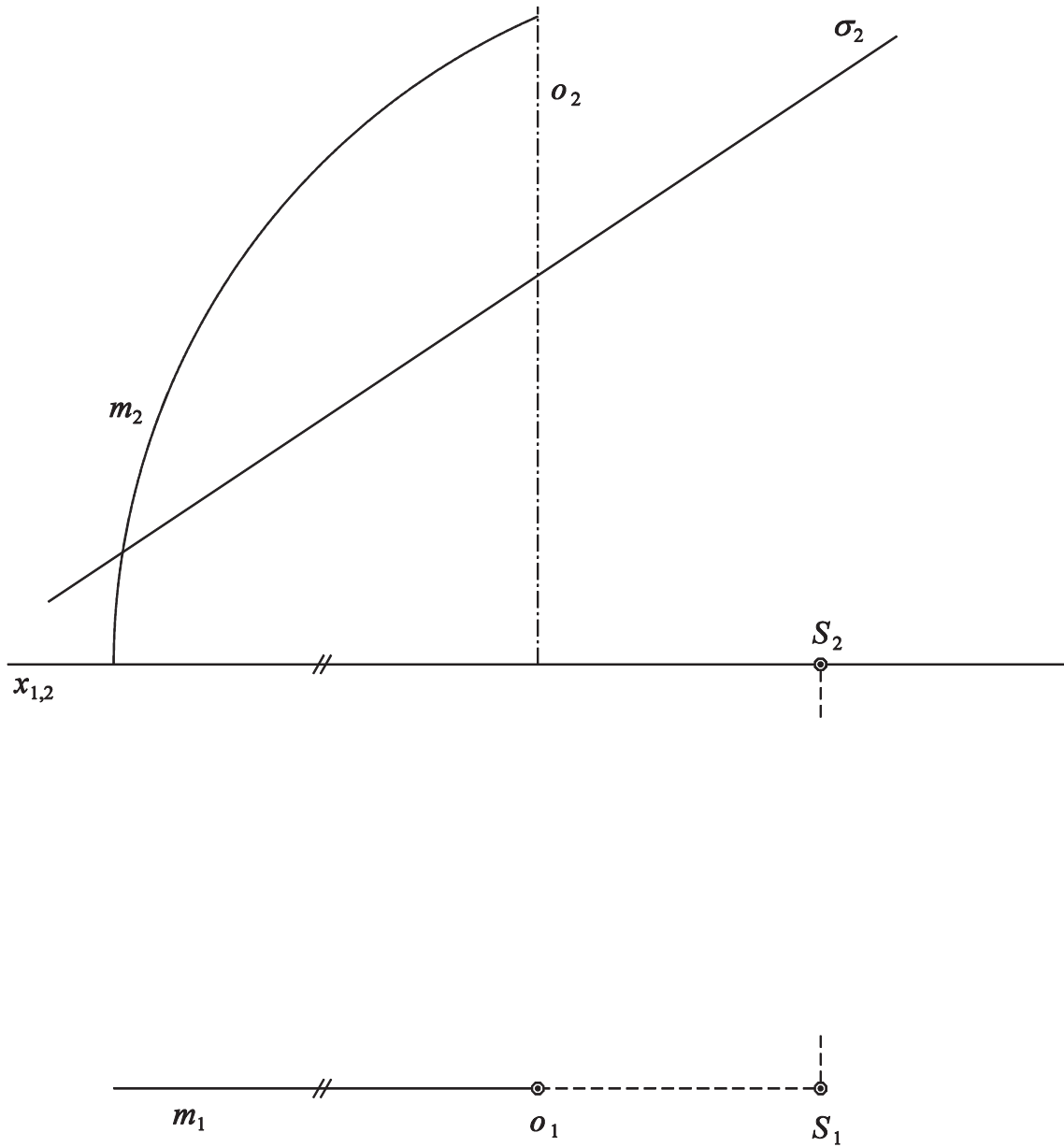


- 5.8. Using Monge projection construct intersection curve  $p$  of the torus and the given plane  $\sigma$ . Indicate the visibility. Construct normal line  $n$  at point of intersection  $M \in p$ ,  $z_M = 35$ .

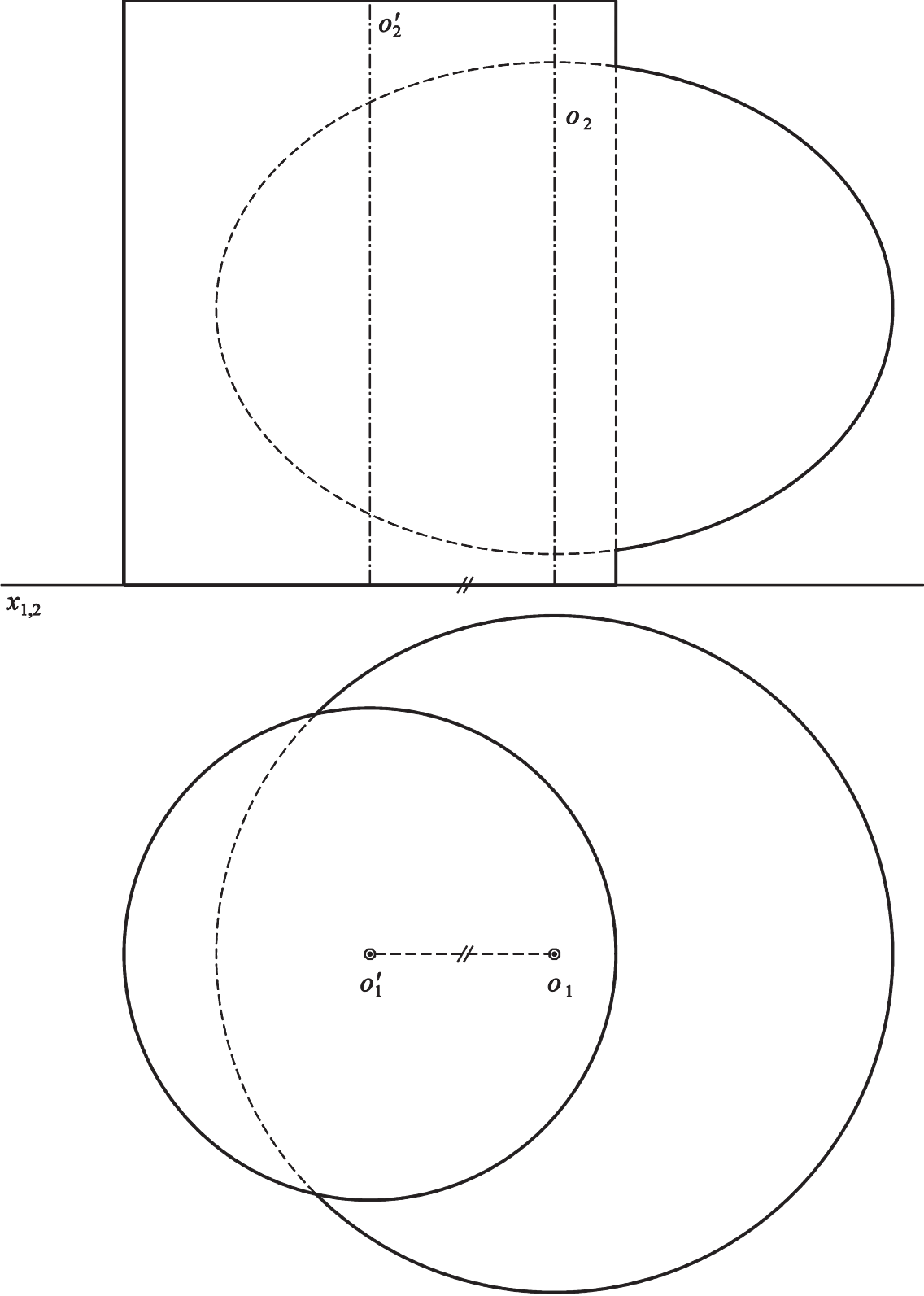




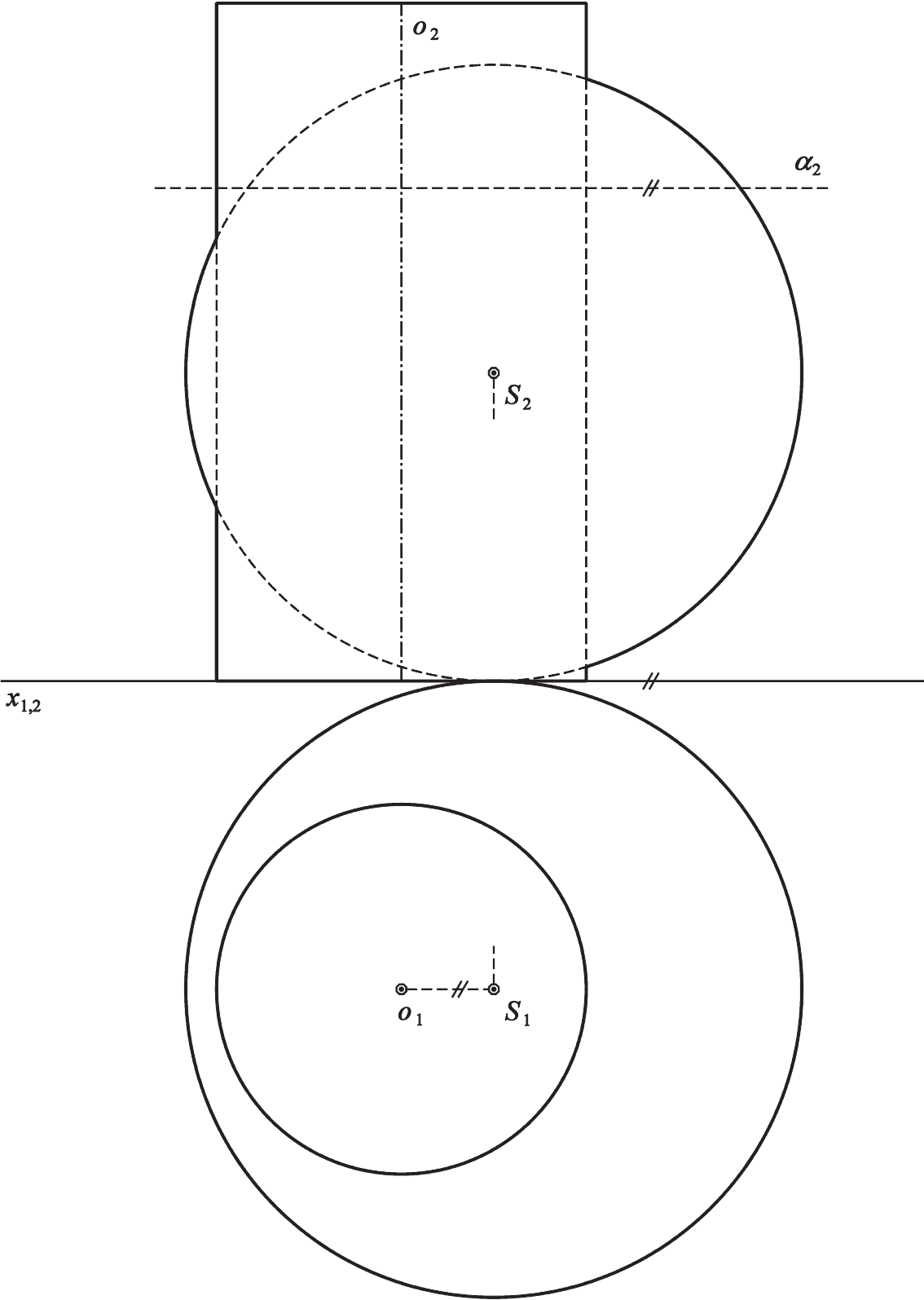
5.9. Surface of revolution (axis  $o$ , principal half-meridian  $m$  - circular arc with centre at point  $S$ ) is given. Using Monge projection construct the top view and the front view of the surface. Construct intersection curve  $p$  of the surface of revolution and the given plane  $\sigma$ . Construct normal line  $n$  at point of intersection  $M \in p$ ,  $z_M = 40$ .



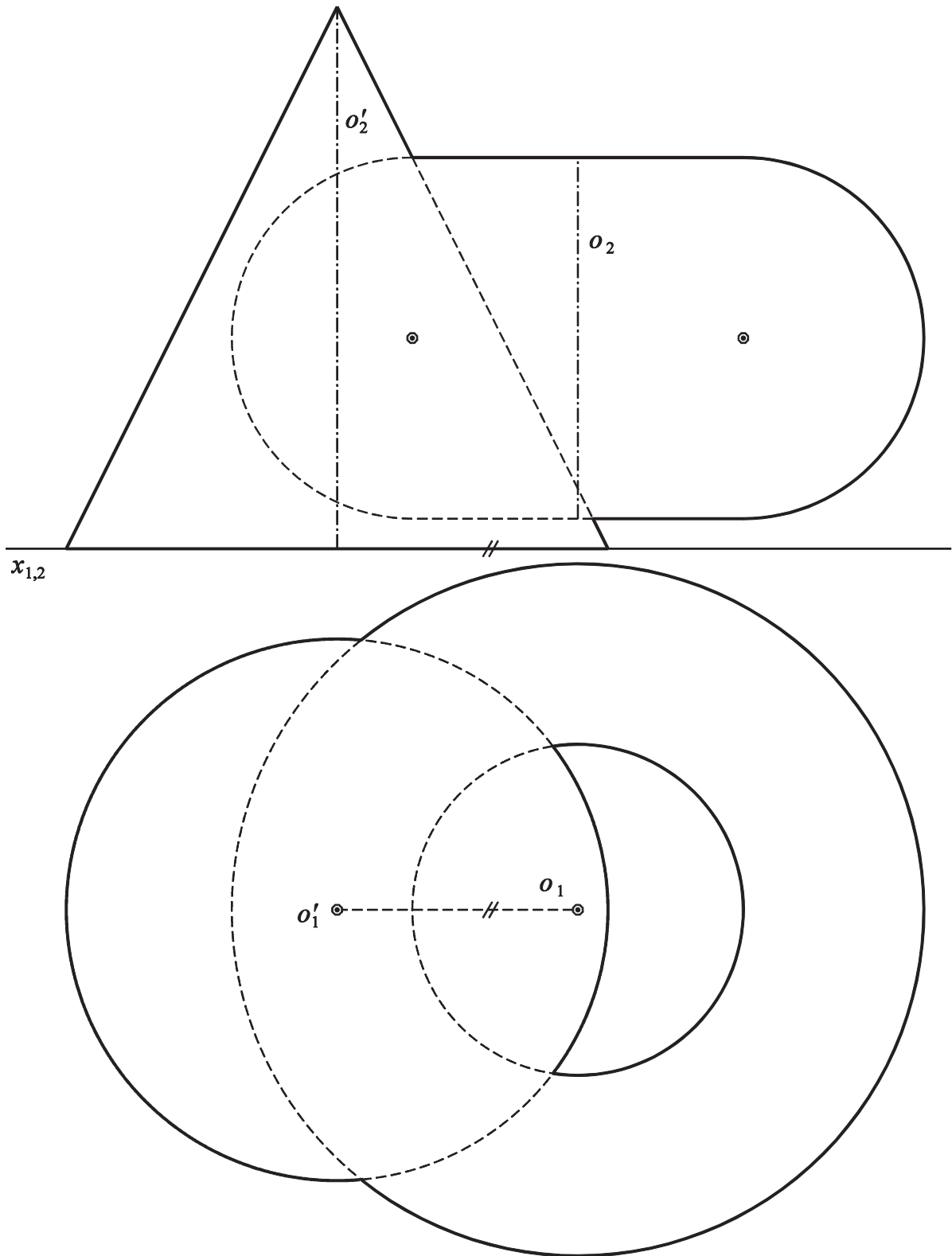
5.10. Ellipsoid of revolution (axis  $o$ ) and cylinder of revolution (axis  $o'$ ) are given. Using Monge projection, construct intersection curve  $q$  of these two surfaces.



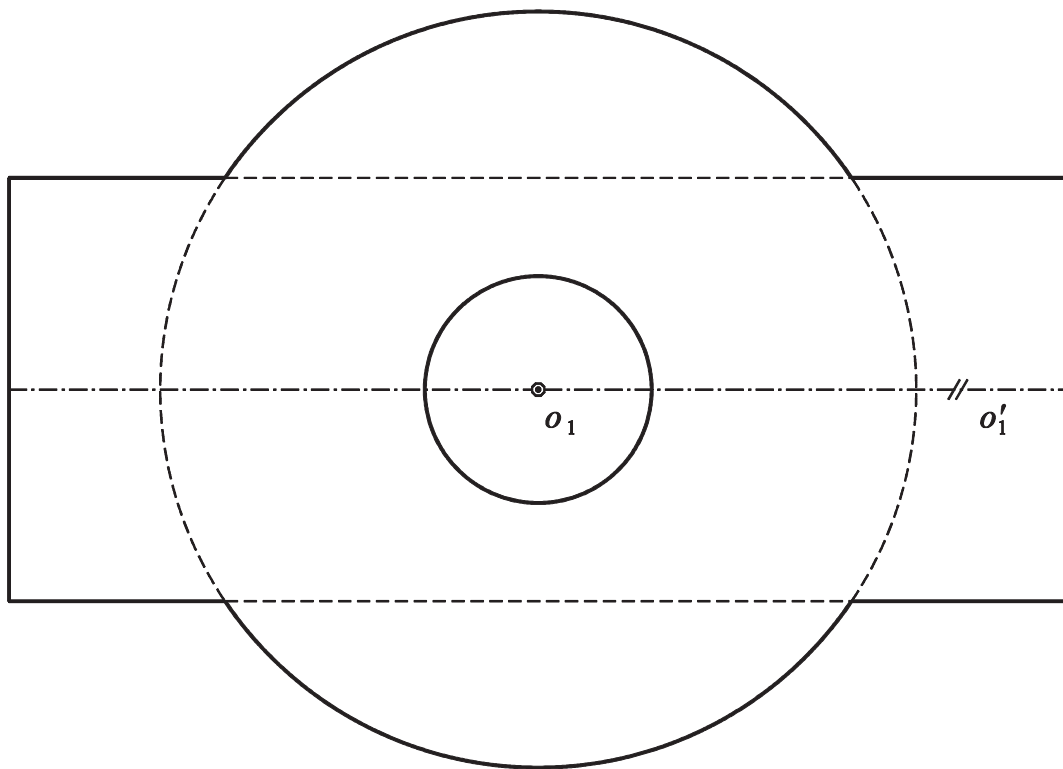
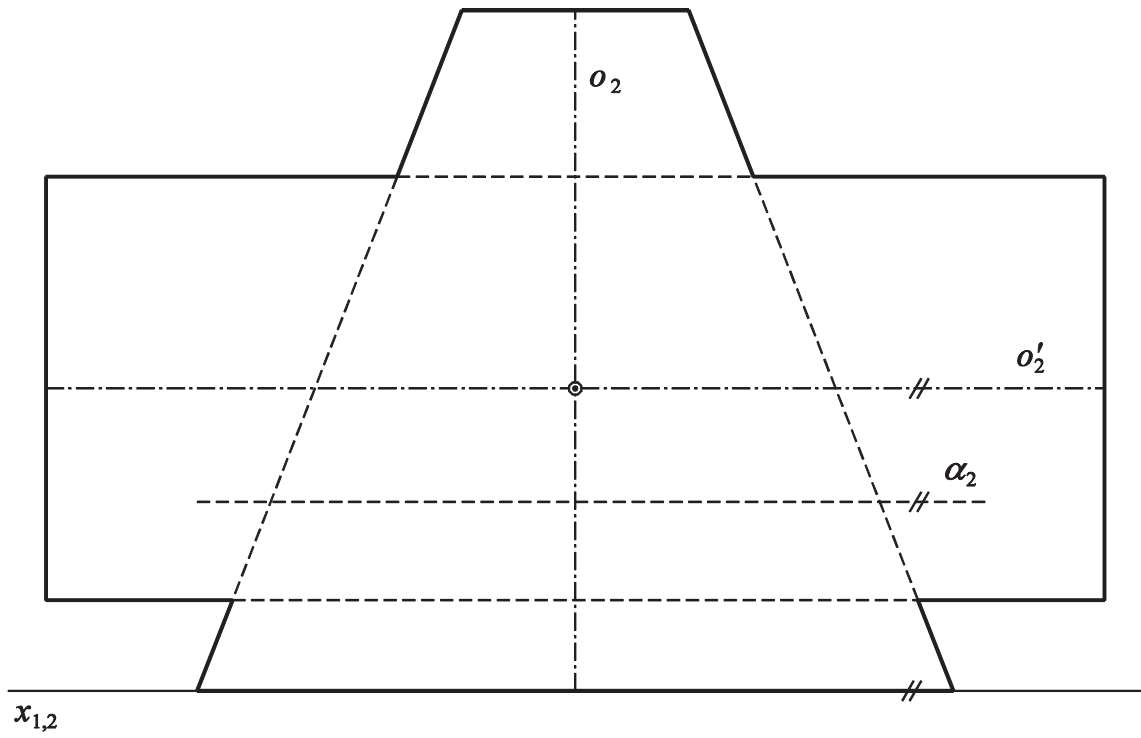
**5.11.** Cylinder of revolution (axis  $o$ ) and sphere (centre  $S$ ) are given. Using Monge projection, construct intersection curve  $q$  of these two surfaces. Construct normal lines of both surfaces at point  $M \in q, M \in \alpha$ .



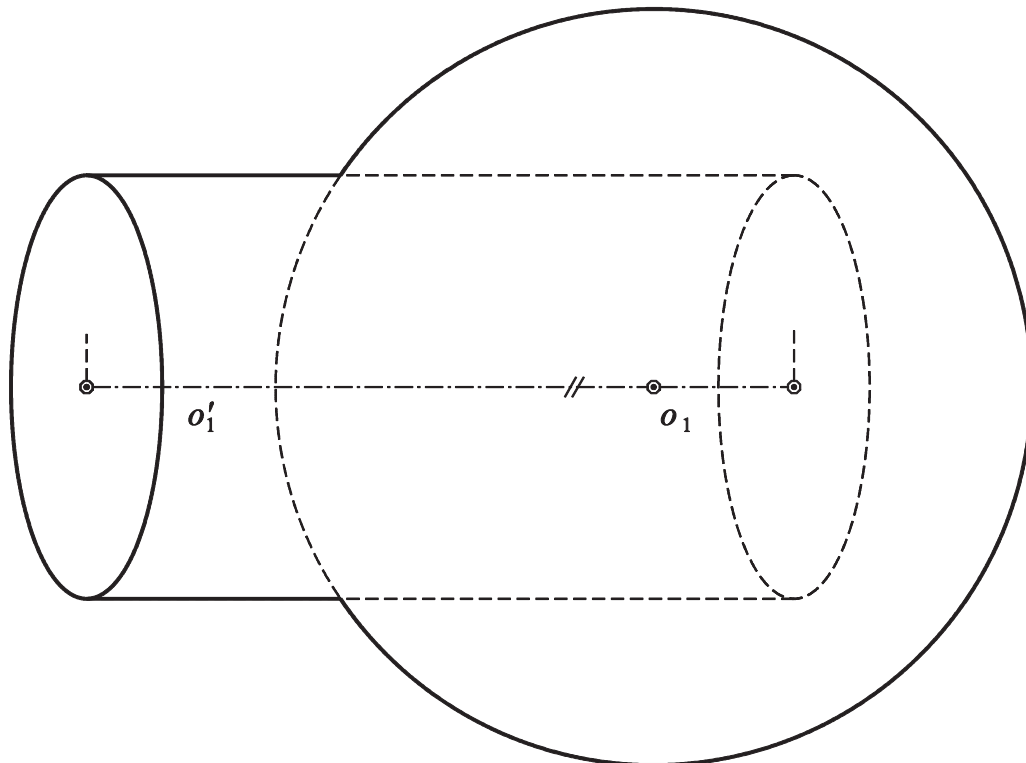
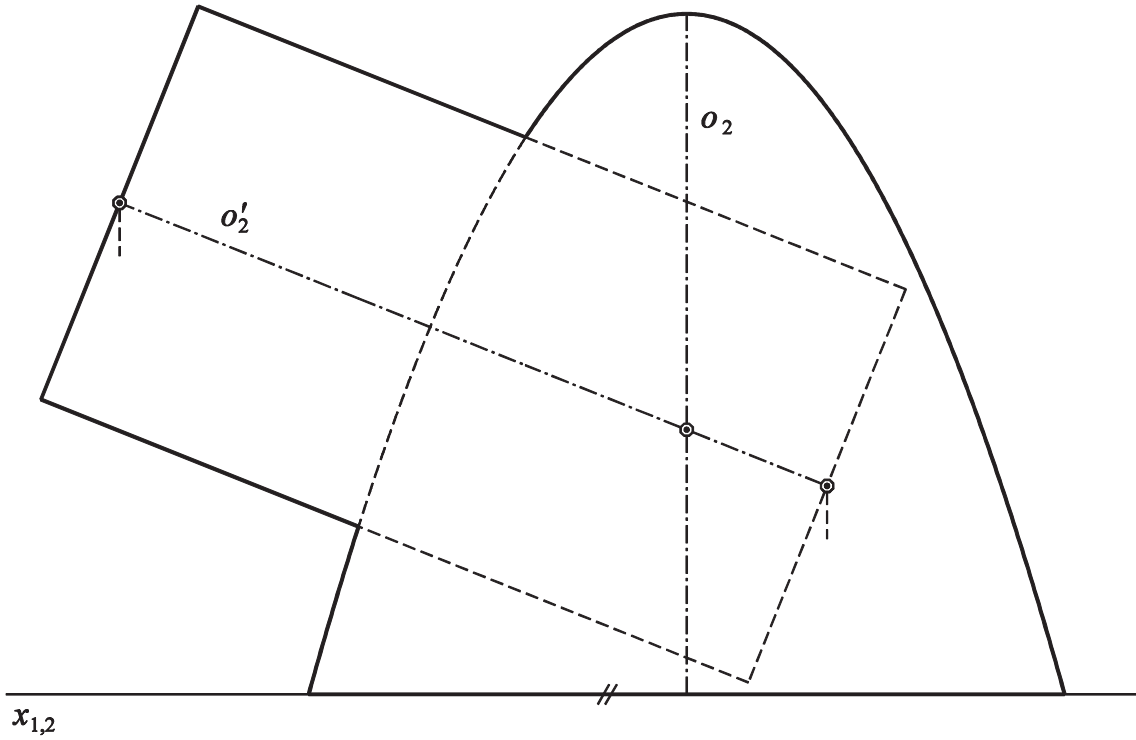
5.12. Surface of revolution (axis  $o$ ) and cone of revolution (axis  $o'$ ) are given. Using Monge projection, construct intersection curve  $q$  of these two surfaces. Indicate the visibility. Construct normal lines of both surfaces at point  $M \in q$ ,  $z_M = 15$ .



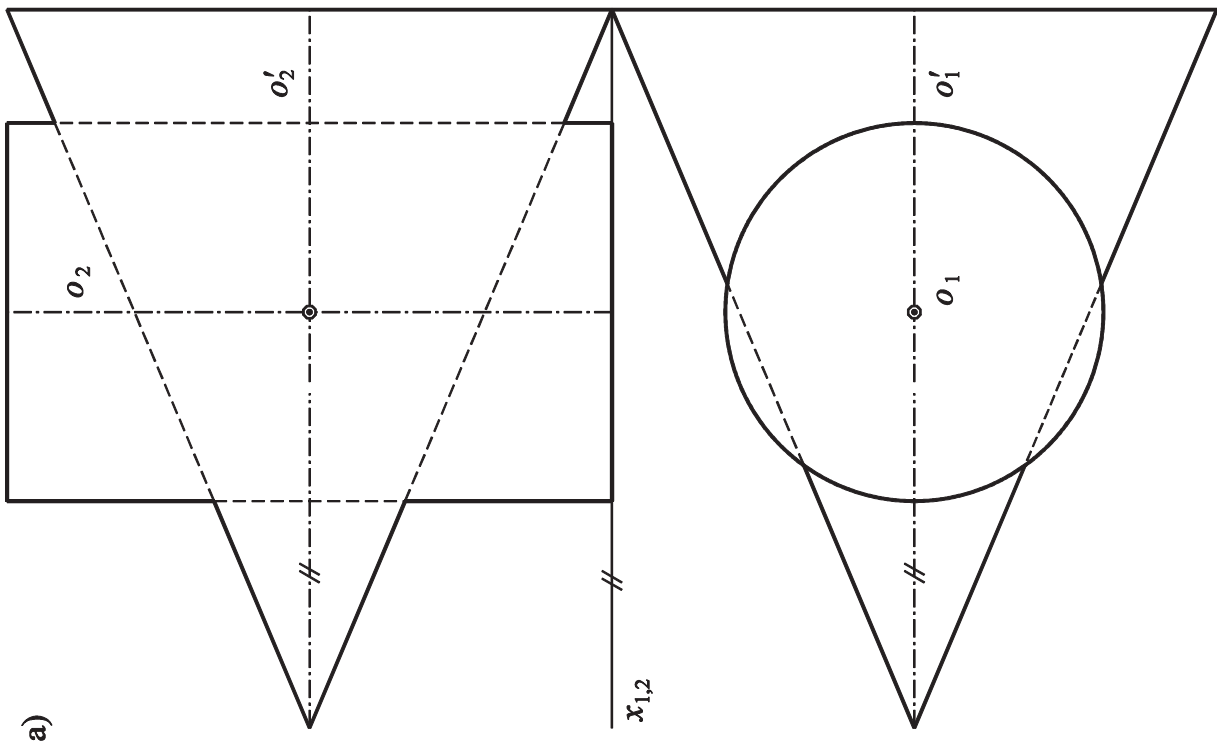
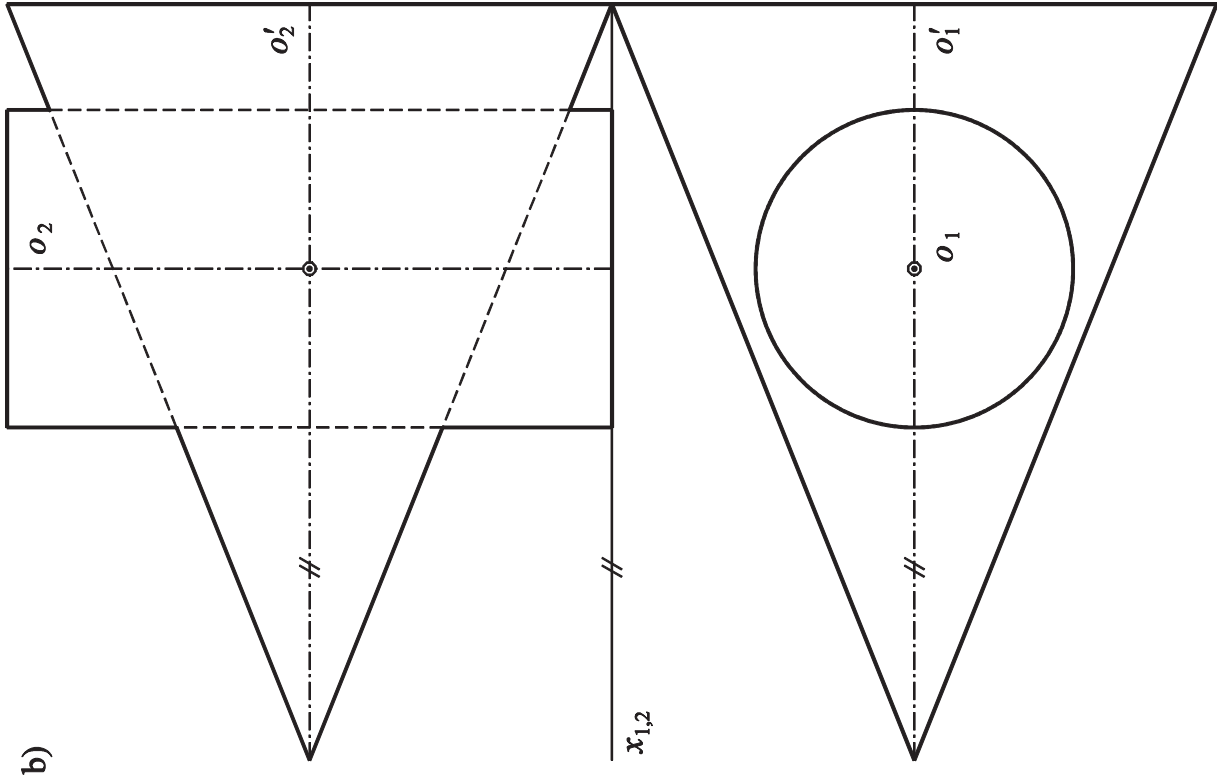
5.13. Truncated cone of revolution (axis  $o$ ) and cylinder of revolution (axis  $o'$ ) are given. Using Monge projection, construct intersection curve  $q$  of these two surfaces. Indicate the visibility. Construct normal lines of both surfaces at point  $M \in q$ ,  $M \in \alpha$ .



5.14. Paraboloid of revolution (axis  $o$ ) and cylinder of revolution (axis  $o'$ ) are given. Using Monge projection, construct intersection curve  $q$  of these two surfaces. Indicate the visibility. Construct normal lines of both surfaces at point  $M \in q$ ,  $z_M = 30$  construct normal lines of both surfaces.



5.15. Cylinder of revolution (axis  $o$ ) and cone of revolution (axis  $o'$ ) are given. Using Monge projection, construct intersection curve  $q$  of these two surfaces. Indicate the visibility.

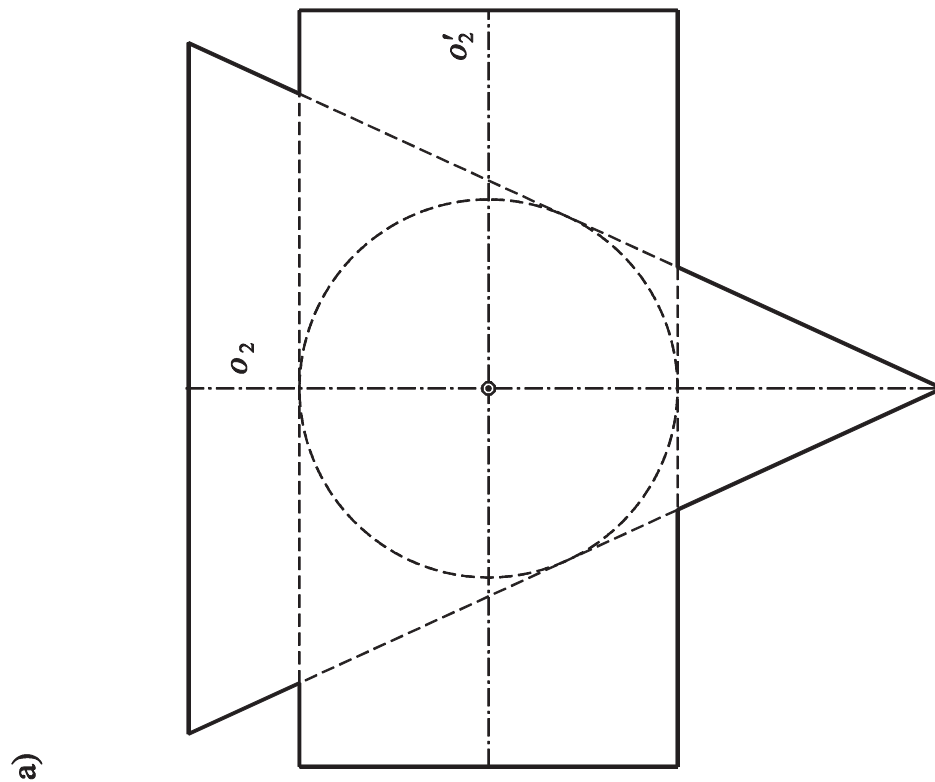
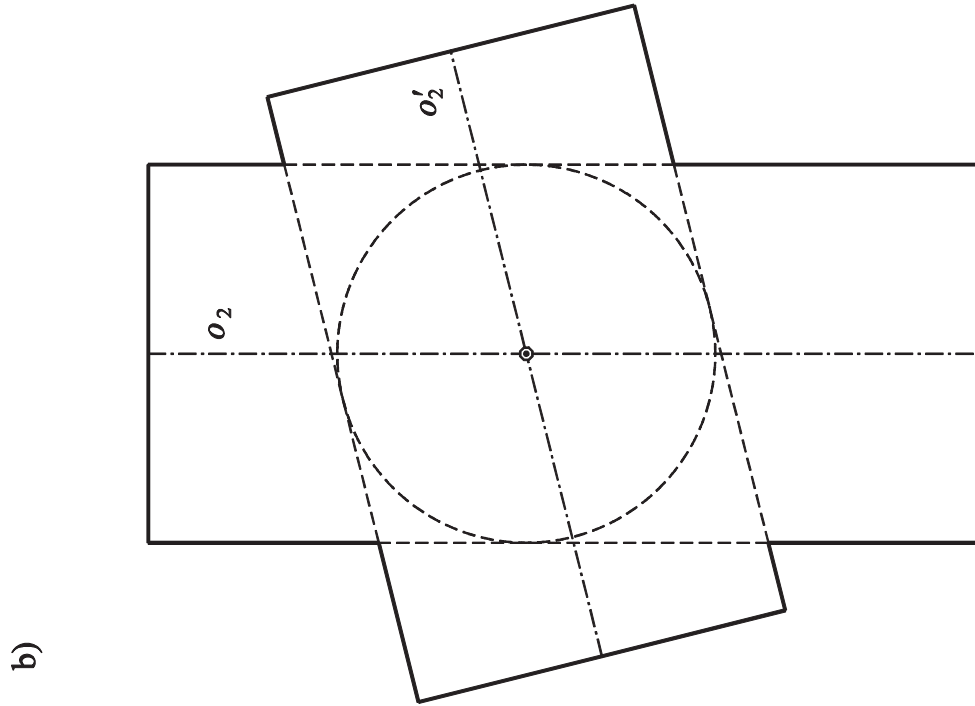




5.16. Construct front view of intersection curve  $q$  of two surfaces of revolution.

a) Axial section of cone of revolution (axis  $o$ ) and axial section of cylinder of revolution (axis  $o'$ ) are given.

b) Axial sections of two cylinders of revolution (axes  $o$  and  $o'$ ) are given.



5.17. Two truncated cones of revolution (axes  $o$  and  $o'$ ) are given. Using Monge projection construct intersection curve  $q$  of these surfaces. Indicate the visibility.

