1. $y^2 + 4z^2 = 4$

elliptical cylinder with rulings parallel to the x-axis

2. $x = y^2 + 4z^2$

paraboloid opens in $+x$ vertex $(0,0,0)$

3. $z = 4 - x^2$

parabolic cylinder with ruling parallel to the y-axis

4. $9x^2 - y^2 + z^2 = 0$

Cone opening in the y

5. $x^2 = y^2 + 4z^2$

Cone - opens in x

6. $25x^2 + 4y^2 + z^2 = 100$

ellipsoid core center $(0,0,0)$ $r_x = 2$ $r_y = 5$ $r_z = 10$

7. $yz = 4$

hyperbolic cylinder with rulings parallel to the x-axis

8. $-x^2 + 4y^2 - z^2 = 4$

hyperboloid of two sheets opening in y.

9. $4x^2 + 9y^2 + z = 0$ $z = -(4x^2 + 9y^2)$

paraboloid opening in $-z$, vertex $(0,0,0)$

10. $36x^2 + y^2 + 36z^2 = 36$

ellipsoid core center $(0,0,0)$ $r_x = 1$ $r_y = 6$ $r_z = 1$

11. $4x^2 - 16y^2 + z^2 = 16$

hyperboloid of one sheet tunnels about y axis

12. $y = z^2 - x^2$

(Saddle) hyperbolic paraboloid TOP HEAD POINTING IN $+y$ STRADDLING THE z-axis

13. $x - y^2 = 0$

paraboloid cylinder with ruling parallel to the z-axis

14. $x^2 - y^2 = 1$

hyperbolic cylinder with rulings parallel to the z-axis

15. $x = y^2 - z^2$

(saddle) hyperbolic paraboloid TOP HEAD POINTING IN +x STRADDLING THE y-axis

16. $z = \cos x$

cosine cylinder with rulings parallel to the y-axis

17. $y^2 = x^2 + 2z^2$

cone - opens in y

18. $x^2 - 2z^2 = 1$

hyperbolic cylinder with rulings parallel to the y-axis

19. $4x^2 + y^2 + 4z^2 - 4y - 24z + 36 = 0$

$4x^2 + y^2 - 4y + 4 + 4z^2 - 24z + 36 = 4$

$4x^2 + (y-2)^2 + 4(z-3)^2 = 4$

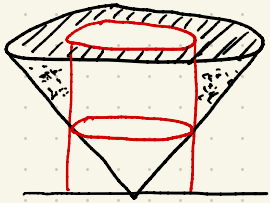
$x^2 + \frac{(y-2)^2}{4} + (z-3)^2 = 1$

ellipsoid center: $(0, 2, 3)$ $r_x = 1$ $r_y = 2$ $r_z = 1$

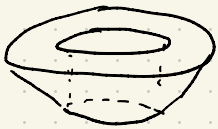
21. $z = \sqrt{x^2 + y^2}$ $x^2 + y^2 = 1$ $1 \le z \le 2$

half cone opens $+z$

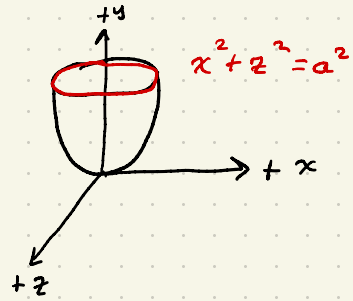
circle cylinder ruling parallel to z



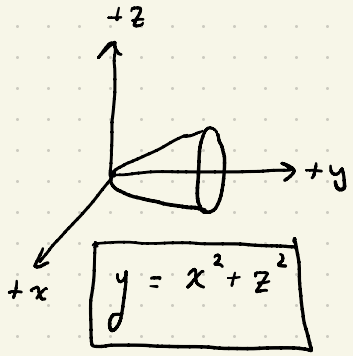
outer core



22.



$x^2 + z^2 = a^2$



$y = x^2 + z^2$