1. Find a parametrization of the portion S of the cone with equation $x^2 + y^2 = z^2$ lying above or below the disk $x^2 + y^2 \leq 4$. Specify the domain D of the parametrization.

2. Describe the surface parameterized by

$$G(\theta, z) = (R\cos\theta, R\sin\theta, z), \qquad 0 \leq \theta < 2\pi, \qquad -\infty < z < \infty,$$

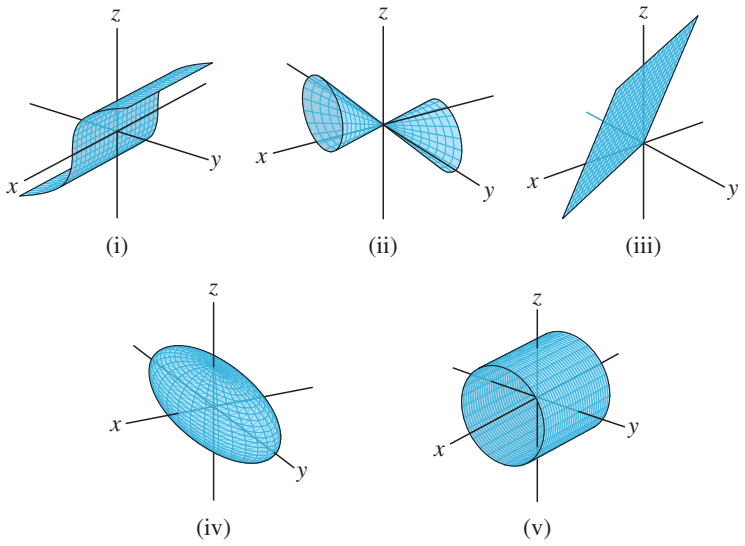
where R is fixed.

3. Describe the surface parameterized by

$$G(\theta, \phi) = (R\cos\theta\sin\phi, R\sin\theta\sin\phi, R\cos\phi), \qquad 0 \leq \theta < 2\pi, \qquad 0 < \phi < \pi,$$

where R is fixed.

4. Match each parametrization with the corresponding surface in the following figure.
   (a) $(u, \cos v, \sin v)$
   (b) $(u, u + v, v)$
   (c) (u, v^3, v)
   (d) $(\cos u \sin v, 3\sin u \sin v, \cos v)$
   (e) $(u, u(2 + \cos v), u(2 + \sin v))$



5. Find a parameterization for the paraboloid $z = 1 - x^2 - y^2$.

6. Find a parameterization for the plane $2x - y - z = 2$.

7. Find an equation for the surface parameterized by

$$G(u, v) = (u^2 - v^2, u + v, u - v)$$

8. Find a parameterization of the part of the cone $x^2 + y^2 = z^2$ between the planes $z = 2$ and $z = 5$.

9. Find a parameterization of the part of the cone $z^2 = x^2 + y^2$, where $z \geq 0$, contained within the cylinder $y^2 + z^2 \leq 1$.

10. Let S be the portion of the sphere $x^2 + y^2 + z^2 = 9$, where $1 \leq x^2 + y^2 \leq 4$ and $z \geq 0$. Find a parameterization of S.