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■ Example 7 Find the area of the surface cut from the bottom of the paraboloid $z = x^2 + y^2$ by the plane z = 4.

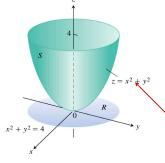
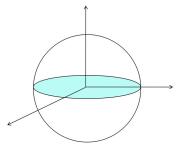


FIGURE 16.46 The area of this parabolic

Example 5 Find the surface area of a sphere of radius *a*.



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