12.6 TRIPLE INTEGRALS IN CYLINDRICAL COORDINATES

EXAMPLE A Find an equation in cylindrical coordinates for the ellipsoid $4x^2 + 4y^2 + z^2 = 1$.

SOLUTION Since $r^2 = x^2 + y^2$ from Equations 2, we have

$$z^2 = 1 - 4(x^2 + y^2) = 1 - 4r^2$$

So an equation of the ellipsoid in cylindrical coordinates is $z^2 = 1 - 4r^2$. ■