

MATH 253 – WORKSHEET 26
SURFACE AREA

The part of the surface $z = f(x, y)$ lying above the region R has *surface area*

$$A = \iint_R \sqrt{1 + f_x^2 + f_y^2} \, dA$$

- (1) Find the surface area of the part of the cylinder $y^2 + z^2 = 9$ lying above the rectangle $[0, 4] \times [0, 2]$ in the xy -plane.

- (2) Consider the funnel-shaped bounded by $z = -\frac{1}{\sqrt{x^2+y^2}}$ and the plane $z = -1$.
- (a) Find its volume
 - (b) Find its surface area