$$S = \int 2\pi x \, ds = \int_1^4 2\pi x \sqrt{1 + \left(\frac{dx}{dy}\right)^2} \, dy$$

9. $y = \sin x, \quad 0 \leqslant x \leqslant \pi$

10. $y = \cos 2x, \quad 0 \leqslant x \leqslant \pi/6$

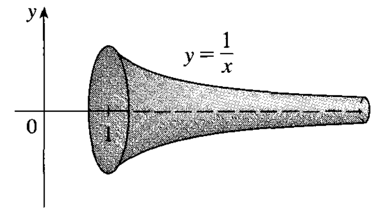
11. $y = \cosh x, \quad 0 \leqslant x \leqslant 1$

12. $2y = 3x^{2/3}, \quad 1 \leqslant x \leqslant 8$

13. $x = \frac{1}{3}(y^2 + 2)^{3/2}, \quad 1 \leqslant y \leqslant 2$

14. $x = 1 + 2y^2, \quad 1 \leqslant y \leqslant 2$

15–20 □ The given curve is rotated about the y-axis. Find the area



28. If the infinite curve $y = e^{-x}$, $x \geqslant 0$, is rotated about the x-axis, find the area of the resulting surface.

29. Find the surface area generated by rotating a loop of the curve $8y^2 = x^2(1 - x^2)$ about the x-axis.