Area of a Surface of Revolution- HW Problems

Find the surface area of the surface obtained by rotating the curve about the x-axis.

1. $y = 2\sqrt{x}$; $\qquad 1 \le x \le 4$

2. $y = \cos(x)$; $\qquad 0 \le x \le \frac{\pi}{2}$

3. $x = 1 + 2y^2$; $\qquad 1 \le y \le 2$

4. $y = \frac{x^3}{6} + \frac{1}{2x}$; $\qquad 1 \le x \le 2$

5. $x = \frac{1}{3}(y^2 + 2)^{\frac{3}{2}}$; $\quad 0 \le y \le 2$

Find the surface area of the surface obtained by rotating the curve about the y-axis.

6. $y = 4 - x^2$; $\qquad\qquad 0 \le x \le 2$

7. $y = \sqrt[3]{x}$; $\qquad\qquad 1 \le x \le 8$

8. $y = \frac{1}{4}x^2 - \frac{1}{2}\ln(x)$; $\qquad 1 \le x \le 2$

9. $x = \sqrt{a^2 - y^2}$; $\qquad\quad 0 \le y \le a$