

$$4. \frac{3\pi R - 4r}{6\pi R}$$

$$6. \text{ (a) } \frac{3}{2}, \frac{7}{3}, \frac{15}{4}, \frac{31}{5}$$

$$\text{(b) } \frac{2}{\pi}, \frac{1}{2}, \frac{4}{3\pi}, \frac{3}{8}$$