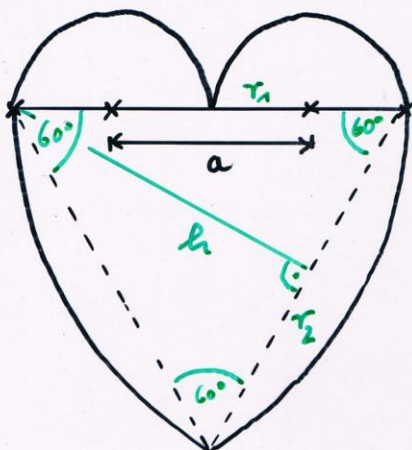


S. 16 / 23 c,



$$r_1 = \frac{1}{2}a; \quad r_2 = 4r_1 = 2a$$

$$l_1 = \frac{\sqrt{3}}{2} \cdot r_2 = \frac{\sqrt{3}}{2} \cdot 2a = \sqrt{3}a$$

$$u = 2 \cdot \frac{1}{2} \cdot 2\pi r_1 + 2 \cdot \frac{1}{6} \cdot 2\pi r_2$$

$$u = 2\pi \cdot \frac{1}{2}a + \frac{2}{3}\pi \cdot 2a =$$

$$= \pi a + \frac{4}{3}\pi a = \frac{7}{3}\pi a \approx 7,33a$$

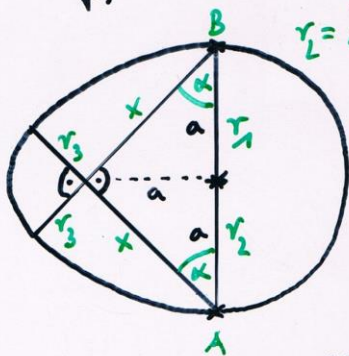
$$A = 2 \cdot \frac{1}{2} \cdot r_1^2 \pi + \frac{1}{6} \cdot r_2^2 \pi + \left( \frac{1}{6} r_2^2 \pi - \frac{1}{2} r_2 \cdot l_1 \right)$$

$$A = \left(\frac{a}{2}\right)^2 \pi + \frac{1}{6} \cdot (2a)^2 \pi + \frac{1}{6} (2a)^2 \pi - \frac{1}{2} \cdot 2a \cdot \sqrt{3}a$$

$$A = \frac{1}{4}a^2\pi + \frac{2}{3}a^2\pi + \frac{2}{3}a^2\pi - \sqrt{3}a^2 = \left(\frac{3}{12} + \frac{16}{12}\right)\pi a^2 - \sqrt{3}a^2$$

$$A = \left(\frac{19}{12}\pi - \sqrt{3}\right)a^2 \approx 3,24a^2$$

S. 16/23 f,



$$r_2 = \overline{AB} = 2r_1 = 2a \quad \alpha = 45^\circ$$

$$r_1 = a; \quad x = \sqrt{2}a$$

$$r_3 = r_2 - x = 2a - \sqrt{2}a = (2 - \sqrt{2})a$$

$$u = \frac{1}{2} \cdot 2\pi r_1 + 2 \cdot \frac{45}{360} \cdot 2\pi r_2 + \frac{1}{4} 2\pi r_3$$

$$u = \pi \cdot a + \frac{1}{2}\pi \cdot 2a + \frac{1}{2} \cdot \pi (2 - \sqrt{2})a$$

$$u = 2\pi a + \pi a - \frac{\sqrt{2}}{2}\pi a = \left(3 - \frac{\sqrt{2}}{2}\right)\pi a \approx 7,20a$$

$$A = \frac{1}{2} r_1^2 \pi + \frac{1}{8} r_2^2 \pi + \left( \frac{1}{8} r_2^2 \pi - 2 \cdot \frac{1}{2} a^2 \right) + \frac{1}{4} r_3^2 \pi$$

$$A = \frac{1}{2}\pi a^2 + \frac{1}{8} \cdot 4\pi a^2 + \left( \frac{1}{8} \cdot 4\pi a^2 - a^2 \right) + \frac{1}{4} (2 - \sqrt{2})^2 a^2 \pi$$

$$A = \pi a^2 + \left(\frac{1}{2}\pi a^2 - a^2\right) + \frac{1}{4} (4 - 4\sqrt{2} + 2)\pi a^2 =$$

$$A = \frac{3}{2}\pi a^2 - a^2 + \frac{3}{2}\pi a^2 - \sqrt{2}\pi a^2 = (3\pi - \sqrt{2}\pi - 1)a^2$$

$$A \approx 3,98a^2$$