



永春高中數學科 階城盃答案卷

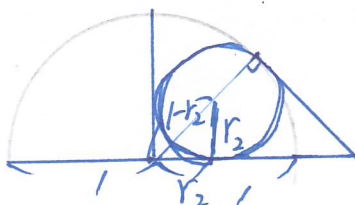
班級 115 座號 11 姓名 [REDACTED] 第 73 期第 2 大題

最佳解!

(1)

$$(1-r_2) = r_2 = \sqrt{2} - 1$$

$$r_2 = \frac{1}{\sqrt{2}+1} = \sqrt{2}-1$$



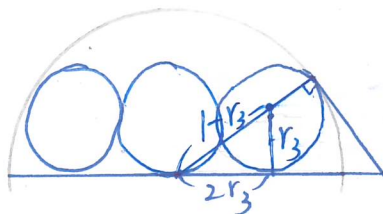
(2)

$$(1-r_3)^2 = (2r_3)^2 + r_3^2$$

$$1 - 2r_3 + r_3^2 = 4r_3^2 + r_3^2$$

$$4r_3^2 + 2r_3 - 1 = 0$$

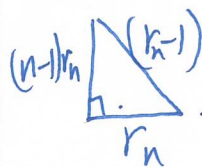
$$r_3 = \frac{-2 \pm \sqrt{20}}{8} = \frac{-1 \pm \sqrt{5}}{4} \quad (\text{捨去}) \quad \therefore r_3 = \frac{-1 + \sqrt{5}}{4}$$



(3)

由 (1) (2) 可知

$$r_n = \frac{-1 \pm \sqrt{1+(n-1)^2}}{2(n-1)^2}$$



$$(r_{n-1})^2 = r_n^2 + [(n-1)r_n]^2 = \frac{-1 \pm \sqrt{1+(n-1)^2}}{(n-1)^2} \quad (\text{捨去})$$

$$r_n^2 - 2r_n + 1 = r_n^2 + (n-1)^2 r_n^2 = \frac{-1 \pm \sqrt{1+(n-1)^2}}{(n-1)^2}$$

$$(n-1)^2 r_n^2 + 2r_n - 1 = 0$$

$$A: (1) \frac{\sqrt{2}-1}{4} \quad (2) \frac{-1+\sqrt{5}}{4} \quad (3) \frac{-1+\sqrt{1+(n-1)^2}}{(n-1)^2}$$

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