

問題1

$$(1) \quad \vec{OP} = \frac{\vec{a}}{3} - \vec{b}$$

$$(2) \quad \vec{OQ} = \frac{\vec{a}}{3} + \frac{\vec{c}}{4}$$

$$(3) \quad \frac{OR}{OA} = \frac{7 + 3\sqrt{41}}{48}$$

問題2

$$(1) \quad \frac{1}{3}$$

$$(2) \quad \frac{32}{95}$$

$$(3) \quad \frac{3m^2 + 3m + 2}{(3m + 2)(3m + 1)}$$

問題3

(1) 省略

$$(2) \quad b_{4m-3} = \begin{cases} 1 & (m = 1) \\ 11 & (m = 2, 3, \dots) \end{cases}$$

(3) c_1 から c_{20} は以下の通り.

5, 3, 1, 1, 1, 9, 7, 7, 7, 5,

3, 3, 3, 1, 9, 9, 9, 7, 5, 5

問題4

$$(1) \quad S_1 = p - q + \sqrt{p^2 + q^2}$$

$$(2) \quad S_2 = q - p + \sqrt{p^2 + q^2}$$

$$(3) \quad \alpha = \frac{\pi}{12}, \quad \beta = \frac{13}{12}\pi$$