

問題1

$$(1) \overrightarrow{OH} = \frac{13}{10}\vec{a} - \frac{3}{10}\vec{b}$$

$$(2) \overrightarrow{ON} = \frac{13}{7}\vec{a} - \frac{3}{7}\vec{b}$$

問題2

$$(1) m=2 \text{ のとき} : \frac{1}{3}, \quad m=3 \text{ のとき} : 0, \quad m=4 \text{ のとき} : \frac{4}{35}$$

$$(2) m=3 \text{ のとき} : \frac{11}{60}, \quad m=4 \text{ のとき} : \frac{1}{56}$$

問題3

$$(1) a_7 = 6, \quad a_8 = 9$$

$$(2) a_{2m-1} = (m-1)(m-2), \quad a_{2m} = (m-1)^2$$

$$(3) \sum_{k=1}^{2n} a_k = \frac{1}{6}n(n-1)(4n-5)$$

問題4

$$(1) d_1 = \frac{4t^3}{\sqrt{36t^4 - 12t^2 + 5}}, \quad d_2 = \frac{t(12t^4 - 8t^2 + 5)}{2\sqrt{36t^4 - 12t^2 + 5}}$$

$$(2) t = \frac{\sqrt{2}}{2}, \quad t = \frac{\sqrt{30}}{6}$$

$$(3) t = \frac{\sqrt{2}}{2} \text{ のとき} : S = \frac{5}{16}, \quad t = \frac{\sqrt{30}}{6} \text{ のとき} : S = \frac{25}{48}$$