

令和5年度 専攻科入学試験解答

数学

1.

$$(1) x = -\frac{3}{2}, \frac{1}{2}, \frac{4}{3}$$

$$(2) x = \frac{\pi}{6}, \frac{5}{2}\pi \leq x \leq \frac{11}{6}\pi$$

$$(3) 2^5 \cdot 3 \cdot 5^{99} \cdot 7^2 \cdot 11$$

$$(4) 917 \text{ 個}$$

$$(5) x = -\frac{7}{44}, y = \frac{5}{44}, z = \frac{3}{44}$$

$$(6) \sqrt{78}$$

$$(7) e^{-10}$$

$$(8) x = e^{-2t}(A \cos 3t + B \sin 3t) + \frac{1}{18}e^t$$

2.

$$(1) 2x + 6y + z + 1 = 0$$

$$(2) \left(2, \frac{7}{2}\right) \text{ で極小値 } -\frac{65}{4} \text{ をとる。}$$

3.

$$(1) \frac{64}{15}\pi$$

$$(2) \left(\frac{5}{8}, 1\right)$$

4.

$$(1) P = \begin{pmatrix} \frac{1}{2} & -\frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{pmatrix} \text{ とおけば, } {}^tPAP = \begin{pmatrix} 4 & 0 \\ 0 & 16 \end{pmatrix}.$$

(2)

