# 令和８年度　専攻科入学試験解答

## 数学

**1.** [配点 40 点]

(1) $\frac{\pi}{4} < x < \frac{3\pi}{4}$

(2) $x = -2, 1, 3$

(3) $x = 0$

(4) $\frac{n(n+1)(n+2)}{3}$

(5) $\frac{\sqrt{2-\sqrt{2}}}{2}$

(6) $y' = -e^{-x}(\cos x + \sin x)$

(7) $\frac{\pi}{4}$

(8) $y = -\frac{1}{4}\cos 2x + Ax + B$　($A, B$ は任意定数)

**2.** [配点 20 点] 接線の方程式は, $2x - y = 1$. 共有点は $(0, -1)$.

**3.** [配点 20 点] $\frac{2\pi}{3}$

**4.** [配点 20 点]

(1) $0, 3$(二重解)

(2) $T = \begin{pmatrix} \frac{1}{\sqrt{3}} & \frac{1}{\sqrt{2}} & \frac{1}{\sqrt{6}} \\ \frac{1}{\sqrt{3}} & 0 & -\frac{2}{\sqrt{6}} \\ \frac{1}{\sqrt{3}} & -\frac{1}{\sqrt{2}} & \frac{1}{\sqrt{6}} \end{pmatrix}$ とおけば, ${}^tTAT = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 3 \end{pmatrix}$.