

科目 数学 (1枚)

問題 1

$$(1.1) \quad r = 2 \cos \theta - \frac{1}{\cos \theta} \quad (\cos \theta \neq 0).$$

$$(1.2) \quad S = -\frac{\pi}{2} + 2.$$

問題 2

$$(2.1) \quad y = (C_1 + C_2 x)e^{2x} + \frac{1}{4}x + \frac{1}{4} + \frac{1}{2}x^2 e^{2x}.$$

$$(2.2) \quad y = C_1 \cos 3x + C_2 \sin 3x + \frac{1}{6}x \sin 3x.$$

$$(2.3) \quad y = e^x(C_1 \cos 2x + C_2 \sin 2x) - \frac{1}{4}xe^x \cos 2x.$$

問題 3

$$(3.1) \quad \left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, 0\right), \left(-\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}\right), \left(\frac{1}{\sqrt{6}}, -\frac{1}{\sqrt{6}}, \sqrt{\frac{2}{3}}\right).$$

$$(3.2) \quad \begin{pmatrix} \sqrt{2} & 2\sqrt{2} & \frac{1}{\sqrt{2}} \\ 0 & \sqrt{3} & -\frac{2}{\sqrt{3}} \\ 0 & 0 & \frac{5}{\sqrt{6}} \end{pmatrix}.$$

$$(3.3) \quad 5.$$