

國立金門技術學院 99 學年度電資研究所考試入學參考解答

科目：數學

$$1. A^{-1} = \begin{bmatrix} -25 & -12 & 7 \\ -11 & -5 & 3 \\ 4 & 2 & -1 \end{bmatrix}.$$

$$2. x_1 = -4, x_2 = 2, x_3 = 10$$

$$3. -120.$$

$$4. \lambda_1 = 1, X_1 = \begin{bmatrix} -1 \\ 1 \\ 2 \end{bmatrix}, \lambda_2 = 2, X_2 = \begin{bmatrix} -2 \\ 1 \\ 4 \end{bmatrix}, \lambda_3 = 3, X_3 = \begin{bmatrix} -1 \\ 1 \\ 4 \end{bmatrix}.$$

$$5. f(A) = \begin{bmatrix} -5 & -8 \\ 4 & 7 \end{bmatrix}.$$

$$6. p = \frac{13 \times \binom{4}{4} \times 12 \times \binom{4}{1}}{\binom{52}{5}}$$

$$7. p = \frac{0.6 \times 0.25}{0.4 \times 0.3 + 0.6 \times 0.25}$$

$$8. E(X) = 1 \times 1/6 + 2 \times 1/6 + 3 \times 1/6 + 4 \times 1/6 + 5 \times 1/6 + 6 \times 1/6 = 21/6 = 7/2$$
$$E(X^2) = 1^2 \times 1/6 + 2^2 \times 1/6 + 3^2 \times 1/6 + 4^2 \times 1/6 + 5^2 \times 1/6 + 6^2 \times 1/6 = 91/6$$
$$\text{Var}(X) = E(X^2) - E(X)^2 = 91/6 - 49/4$$

$$9. E(X) = 5$$

$$\text{Var}(X) = (7-3)^2 / 12$$

$$10. f_X(x) = \frac{10}{3} x(1-x^3), 0 \leq x \leq 1$$

$$f_Y(y) = 5y^4, 0 \leq y \leq 1$$