

系級：_____ 學號：_____ 姓名：_____

1. $\lim_{x \rightarrow \pi} \frac{\sin x}{x - \pi} = \lim_{x \rightarrow \pi} \frac{\cos x}{1} = -1$

2. $\frac{d}{dx}(\ln x) = \frac{1}{x}$

3. $\sin(\alpha + \beta) = \sin \alpha \cos \beta + \sin \beta \cos \alpha$
 $\cos(\alpha + \beta) = \cos \alpha \cos \beta - \sin \alpha \sin \beta$

4. $\int_0^{2\pi} \cos 2\theta \sin \theta d\theta = 0$

5. $\int e^x \sin x dx = \frac{1}{2} e^x (\sin x - \cos x) + c$

6. $\int \frac{1}{x-1} dx = \ln |x-1| + c$

7. $\int_0^2 \int_{\frac{x}{2}}^1 e^{-y^2} dy dx = \int_0^1 \int_0^{2y} e^{-y^2} dx dy = \int_0^1 (xe^{-y^2} \Big|_0^{2y}) dy = \int_0^1 2ye^{-y^2} dy = -e^{-1} + 1$

8. $[A]_{m \times n} = \begin{bmatrix} 1 & 2 & 3 \\ 8 & 5 & 7 \\ 11 & 0 & 2 \\ 2 & 7 & 7 \end{bmatrix}, m=4 \quad n=3$

9. $\begin{vmatrix} 2 & 4 & 6 \\ 0 & 6 & 16 \\ -1 & 1 & 5 \end{vmatrix} = 0$

10. $A = \begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix}$ 請求出 A^{-1} 。 Ans: $A^{-1} = \begin{bmatrix} \frac{1}{2} & -\frac{1}{2} \\ \frac{1}{2} & \frac{1}{2} \end{bmatrix}$