

2011 级微积分II期末考试参考答案

1. $\underline{a(a^2 - h^2)\pi}$; 2. $\underline{-\frac{9}{2}\pi}$; 3. $\underline{\frac{1}{8}}$; 4. $\underline{R = 1, \text{收敛域为 } (-1, 1]}$;
5. $\underline{y = C_1 \sin x + C_2 \cos x + x^2 - 2}$; 6. $\underline{x^2 + y^2 = Ce^{-2 \arctan \frac{y}{x}}, C > 0}$.
7. $\underline{2 \sum_{n=0}^{\infty} \frac{1}{2n+1} x^{2n+1}, (-1 < x < 1)}$; 8. $\underline{0 < p \leq 1 \text{ 时发散}, p > 1 \text{ 时收敛}}$;
9. $\underline{2a^2}$; 10. $\underline{\frac{1}{10}\pi}$.

二. $p > \frac{1}{3}$ 时级数收敛, $p \leq \frac{1}{3}$ 时级数发散.

三. $f(x) = -e^{-x} - e^x + x^2 + 2$, $g(x) = e^{-x} - e^x + 2x$, 原式 = 1.

四. (1) $f(x) = \frac{2}{3}\pi^2 + 4 \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{n^2} \cos nx, (-\pi \leq x \leq \pi)$. (2) $\frac{1}{12}\pi^2$, (3) $\frac{1}{6}\pi^2$.

五. (2) $f(x) = Cx^2, \frac{\pi}{\sqrt{2}}$. 六. $-2a(a+h)\pi$.