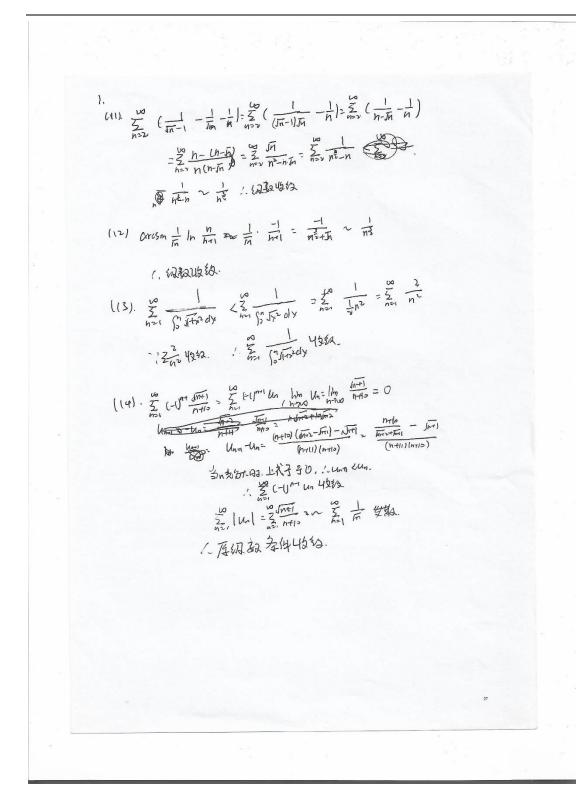
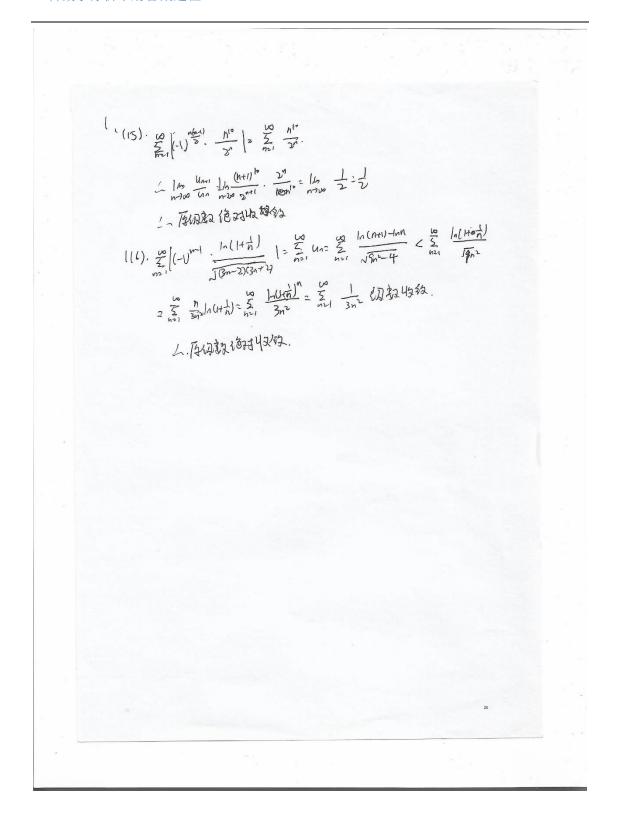
1. 判断下列級數的銘散性.
(1)
$$\sum_{n=1}^{2} \frac{2.5.8.n}{1.5.9.m} [1+4(n-1)]$$
;
(2) $\sum_{n=1}^{2} \frac{1}{2^{n}-1+\sin n}$;
(3) $\sum_{n=1}^{2} u_{n}, u_{n} = \frac{1}{\sqrt{n^{2}+1}} + \frac{1}{\sqrt{n^{2}+2}} + \frac{1}{\sqrt{n^{2}+n}} + \frac{1}{\sqrt{n^{$





2. 讨论下列级数的敛散性.

(3)
$$\sum_{n=1}^{\infty} \left(\frac{an}{n+1}\right)^{n-1} (a>0); \qquad (2) \sum_{n=1}^{\infty} e^{h(x+1)} \cdot e^{x^2} \left(e^{x^2}\right)^n + e^{x^2-1} \ge 1 \cdot 27 \quad [x] \ge 112, \quad$$

当分121 附付日的、公教42级、

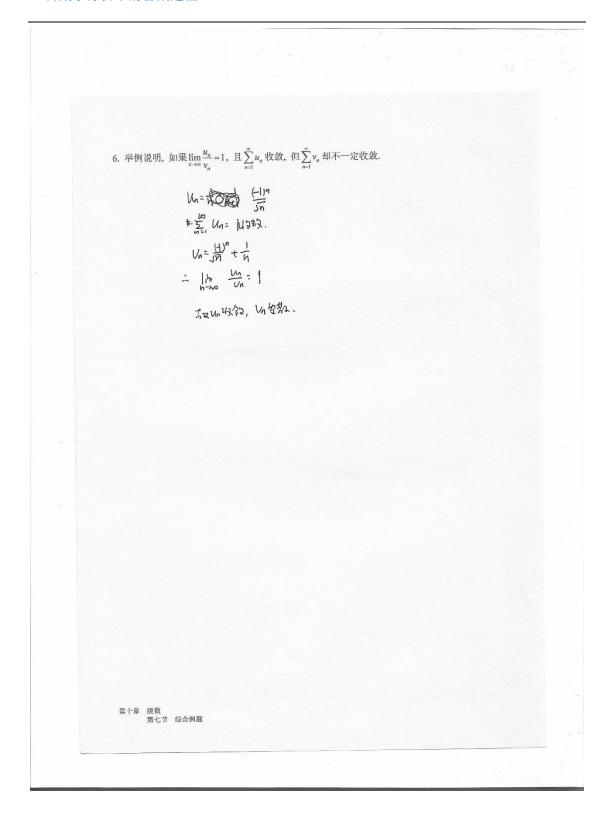
(4) $\sum_{n=1}^{\infty} (-1)^{n-1} \frac{k+n}{n^2}$; $\frac{1}{2} \partial^{2-1} 2 | i | k | c | i | n$, $\langle i | 3 \rangle d^{2} \langle 1 \rangle$. (5) $\sum_{n=1}^{\infty} \frac{1}{n} \sin^{n} \theta$; $\frac{1}{2} \int_{n-1}^{\infty} e^{-1} d^{n-1} d$ 为以10g. 是后间 150 (前) 172 是 30 的的复数。

- 3. 设级数 $\sum_{n=1}^{\infty}u_n$ 收敛,则下面级数中哪一个必收敛.
- A. $\sum_{n=1}^{\infty} (-1)^n \frac{u_n}{n}$;
- B. $\sum_{n=1}^{\infty} u_n^2; \qquad U_n = \frac{-1}{\sqrt{n}} \qquad U_n^2 = \frac{1}{n}.$
 - C. $\sum_{n=1}^{\infty} (u_{2n-1} u_{2n});$
 - $D. \sum_{n=1}^{\infty} \left(u_n + u_{n+1} \right).$

- 4. 设 $0 \le a_n < \frac{1}{n}$ $(n = 1, 2, \cdots)$,则下面级数中哪个必收敛.
- A. $\sum_{n=1}^{\infty} a_n; \qquad C_{\ln} = \frac{1}{n+1}$

- B. $\sum_{n=1}^{\infty} (-1)^n a_n; \qquad \qquad A_n = \int_{-\infty}^{\infty} \frac{0}{n} \frac{d}{n} dx$ $C. \sum_{n=1}^{\infty} \sqrt{a_n}; \qquad \qquad \text{The following products of the products of$

 - D. $\sum_{n=1}^{\infty} (-1)^n a_n^2 . \qquad \qquad \bigcap_{n=1}^{\infty} 2 \frac{1}{n^2}$



7. 设 $a_n > 0, b_n > 0$, 且級數 $\sum_{n=1}^{\infty} a_n = \sum_{n=1}^{\infty} b_n$ 都收敛、证明 $\sum_{n=1}^{\infty} (a_n b_n)$ 收敛、如果去掉 $a_n > 0, b_n > 0$ 这条件、结论是否仍然成立?

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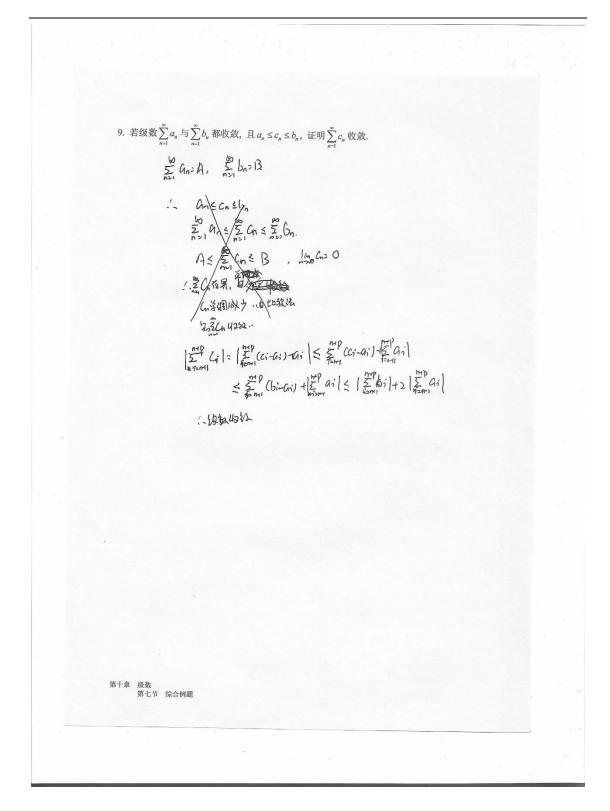
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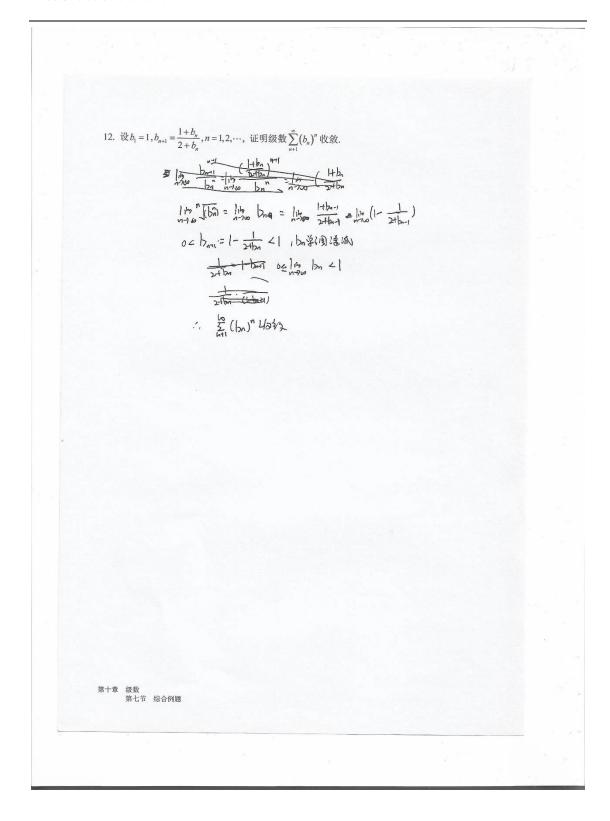
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(An > 0, b_n



10. 设
$$a_n > 0$$
. 銀數 $\sum_{n=0}^{\infty} a_n$ 收敛。 $b_n = 1 - \frac{\ln(1+a_n)}{a_n}$,证明 $\sum_{n=0}^{\infty} b_n$ 收敛。
$$a_n = \frac{a_n^2 + \frac{a_n^2}{a_n^2} - \frac{a_n^2 + \frac{a_n^2}{a_n^2} - \frac{a_n^2}{a_n^2}}{a_n^2 - \frac{a_n^2}{a_n^2} - \frac{a_n^2}{a_$$

11. 设
$$a_n \ge a_{n+1}$$
, 且 $a_n \ge C > 0$ (C 是常数), $n = 1, 2, \cdots$, 证明级数 $\sum_{n=1}^{\infty} (a_n - a_{n+1}) = \sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right)$ 都收敛. $\sum_{n=1}^{\infty} (a_n - a_{n+1}) = \sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right)$ 都 $\sum_{n=1}^{\infty} (a_n - a_{n+1}) = \sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right)$ 都 $\sum_{n=1}^{\infty} (a_n - a_{n+1}) = \sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right)$ $\sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right) = \sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right)$ $\sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right) = \sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right)$ $\sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right) = \sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right)$ $\sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right) = \sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right)$ $\sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right) = \sum_{n=1}^{\infty} \left(1 - \frac{a_{n+1}}{a_n}\right)$



14. 若偶函数 f(x) 在点 x=0 的某领域内具有二阶连续导数,且 f(0)=1,判断级数

15.
$$\frac{\partial f(x)}{\partial f(x)} = \sum_{n=0}^{\infty} a_n x^n dx = [0,1] + \frac{\partial f(x)}{\partial x}, \quad \text{if if: } \exists \exists \exists a_0 = a_1 = 0, \quad \text{for } \exists a_1 + a_2 + a_3 + a_4 + a_5 + a_5$$

16. 设
$$a_{n+3} = a_n, n = 0,1,2,\cdots$$
, 证明当 $|x| < 1$ 时级数 $\sum_{n=0}^{\infty} a_n x^n$ 收敛,并求出其和函数 $S(x)$ 的表示式.

$$S(x) = a_0 + a_1 x + a_2 x^2 + a_0 x^3 + a_1 x^2 + a_2 x^5 - - -$$

$$= a_0 + a_1 x + a_2 x^2 + a_0 x^3 + a_1 x^2 + a_2 x^5 - - -$$

$$= a_0 + a_1 x + a_2 x^2 + a_0 x^3 + a_1 x^2 + a_2 x^5 - - -$$

$$= a_0 + a_1 x + a_2 x^2 + a_0 x^3 + a_1 x^2 + a_2 x^5 - - -$$

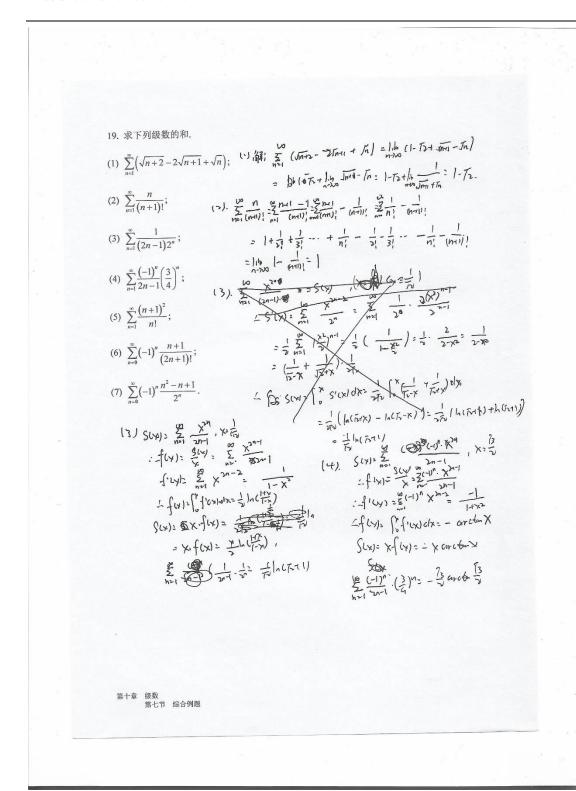
$$= a_0 + a_1 x + a_1 x^2 - a_1 x + a_2 x^2 + a_1 x^2 + a_2 x^2 + a_1 x^2 + a_2 x^2 + a_1 x^2 + a_1 x^2 + a_1 x^2 + a_2 x^2 + a_1 x^2$$

```
17. 求下列级数的收敛域.
                 (1) \sum_{n=0}^{\infty} \frac{(-1)^n}{2n+1} \frac{(x-1)^{2n}}{3^n}; (1) \frac{1}{3} \lim_{n \to \infty} \left| \frac{\ln_n}{\ln_n} \left| \frac{1}{3} \right|^2 + \frac{1}{3} \right|^2 + \frac{1}{3} \cdot 
           (3) \sum_{n=0}^{\infty} \frac{2^{n+1}}{\sqrt{n+1}} (x+1)^n; (x+1)^n = \frac{2^n}{\sqrt{n+1}} \sum_{n=0}^{\infty} \frac{2^n}{\sqrt{n+1}} (x+1)^n = \frac{2^n}{\sqrt{n+1}} (x+1)^n = \frac{2^n}{\sqrt{n+1}} \sum_{n=0}^{\infty} \frac{2^n}{\sqrt{n+1

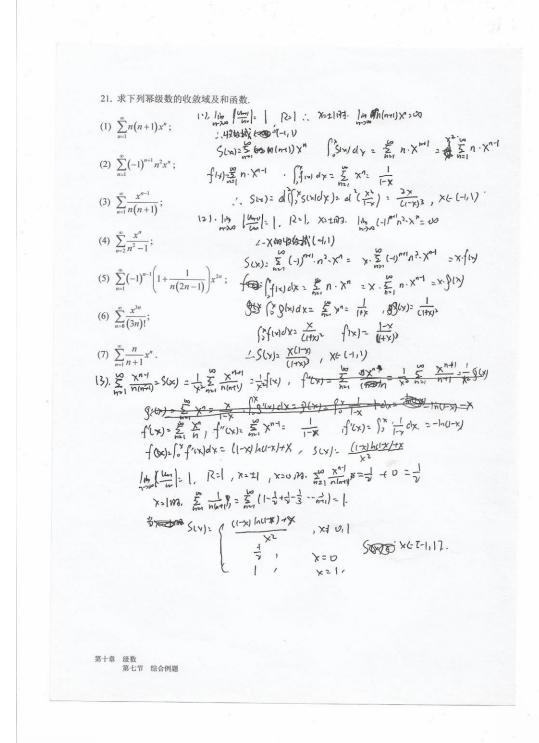
\begin{array}{llll}
    & (4) \sum_{n=1}^{\infty} \frac{(x-2)^{2n+1}}{n4^n}; & ||h||| \frac{|h_{n}h_{1}|}{a_{n}h_{1}}|^{2} = 2 \cdot (-|h|^{2}; \frac{|h|}{h}) \Rightarrow |h|^{2}; \frac{1}{h} \\
    & (5) \sum_{n=1}^{\infty} \frac{\ln(n+1)}{n} x^{n-1}; & ||h||| \frac{|h_{n}h_{1}|}{a_{n}h_{1}}|^{2} = 2 \cdot (-|h|^{2}; \frac{|h|}{h}) \Rightarrow |h|^{2}; \frac{1}{h} \Rightarrow |h|^{2}; \frac{1}{h}
           (6) \sum_{n=1}^{\infty} \frac{(-1)^n n^n}{b^{n^2}} x^n (b \neq 0). (3). The \left| \frac{u_{n+1}}{u_{n+2}} \right|^2 = \frac{1}{2}, \left| \frac{1}{2} \right|^2 = \frac{1}{2}, \left| \frac{1}{2} \right|^2 = \frac{1}{2}
复额 收敛抗 X& Co, 24).
           (3) 1/2 uny = 1 , x= 150%. 2.
                                                                                当时的多数指的数小山的华级
                                                                                                  沙川的 钢级复数
                                                                                                        YS级拟 Z-1,1).
                                   (b). 100 $ (May) \ 10 (m+1) 1 (m+1) 1 (m+1) 1 1 (m+1) 1
                                                                                                                                                          = |m (1+ 1) (n+1) - 1 - 1
                                                                                                                                                             $18/5/AD. 12=0
                                                                                                                                                             3/13/17. 120 12=tus
                                                                                                                                                          ~ 4368 A. ( Xew, (DE) . (DE).
           第十章 级数
第七节 综合例题
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18. 已知 $\sum_{n=1}^{\infty} a_n (x-1)^n$ 在 x=-1 处收敛,判断此级数与 $\sum_{n=1}^{\infty} n a_n (x-1)^n$ 及 $\sum_{n=1}^{\infty} \frac{a_n}{n} (x-1)^n$ 在 x=2 处的负责性

7 5 an(x-1) ax=-121-46 6a.



$$|\{\}, \{\}\}, \sum_{n\geq 1}^{\infty} \frac{(n+1)^{2}}{n!} = \sum_{n=1}^{\infty} \frac{n^{2} + \lambda n + 1}{n!} = \sum_{n=1}^{\infty} \frac{n^{2}}{n!} + \sum_{(n-1)^{2}}^{\infty} \frac{n^{2} + 1}{n!} + \sum_{(n-1)^{2}}^$$



2). (Lb). $\frac{1}{1000} \frac{1}{1000} = \frac{1}{1000}$, $\frac{1}{1000} \frac{1}{1000} = \frac{1}{1000}$, $\frac{1}{1000} \frac{1}{1000} = \frac{1}{1000}$, $\frac{1}{1000} \frac{1}{1000} = \frac{1}{1000} \frac{1}{1000} =$

$$\frac{1}{\sqrt{160}} \left(\frac{1}{\sqrt{160}} \right) = 0, \quad |2 + 100 \text{ s.} \quad |2 + 1$$

22. 证明级数
$$\sum_{n=0}^{\infty} \frac{(-1)^n x^n}{(n!)^2}$$
 的和函数满足微分方程 $xy'' + y' + y = 0$.

$$Y = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot X^n.$$

$$Y' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot n \cdot X^{n-1}$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot n \cdot (n-1) \cdot X^{n-2}.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot n \cdot (n-1) \cdot X^{n-2}.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot n \cdot (n-1) \cdot X^{n-2}.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^{n-1} \cdot (n^2) + \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n.$$

$$Y'' = \sum_{n=0}^{\infty} \frac{(-1)^n}{(n!)^3} \cdot x^n \cdot (n^2) \cdot x^n.$$

25.
$$\mathcal{H}f(x) = \frac{1}{x(x+3)} dx = 1$$
 \mathcal{L} \mathcal{H} \mathcal{L} \mathcal{L}

26. 证明:

(1)
$$\sum_{n=1}^{\infty} \left(-1\right)^{n-1} \frac{\cos nx}{n^2} = \frac{\pi^2 - 3x^2}{12}, -\pi \le x \le \pi;$$

(2)
$$\sum_{n=1}^{\infty} \frac{\cos nx}{n^{2}} = \frac{3x^{2} - 6\pi x + 2\pi^{2}}{12}, \quad 0 \le x \le 2\pi.$$
(1)
$$\frac{1}{12} \frac{3}{12} \frac{1}{12} \frac{1}{12$$

