## 高等数学(理工类、上册)202009版勘 误(2101)

- P7 L23: "每个 $x \in D(f)$ ,都有f(x+T) = f(x)" 改成 "每个 $x \in D(f)$ ,有 $x+T \in D(f)$ 且f(x+T) = f(x)"
- P18 L15: " $r = 2R\cos\theta$ ,  $\theta \in (-\frac{\pi}{2}, \frac{\pi}{2})$ " 改成 " $r = 2R\cos\theta$ ,  $\theta \in [-\frac{\pi}{2}, \frac{\pi}{2}]$ "
- P54 L3: "(3)  $\lim_{x\to\infty} (1-2x)^{\frac{1}{x}}$ " 改成 "(3)  $\lim_{x\to 0} (1-2x)^{\frac{1}{x}}$ "
- P54 L6: "(3)  $\lim_{x\to\infty} (1-2x)^{\frac{1}{x}}$ " 改成 "(3)  $\lim_{x\to 0} (1-2x)^{\frac{1}{x}}$ "
- P54 L15: " $\lim_{x\to\infty}$ " 改成 " $\lim_{x\to+\infty}$ "注: 此题解中有四处极限,全部换成  $\lim_{x\to+\infty}$
- P66 L3: " $\lim_{x\to 0} \frac{x}{\tan x}$ " 改成 " $\lim_{x\to n\pi} \frac{x}{\tan x}$ "
- P61 L26: "则称f(x)在开区间(a,b)上连续." 改成 "则称f(x)在开区间(a,b)内连续.
- P66 L8: " $|f(x)| \le e^x 1$ " 改成 " $|f(x)| \le e^{|x|} 1$ "
- P70 L3: " $|f(x)| \le e^{\sin x} 1$ " 改成 " $|f(x)| \le e^{|\sin x|} 1$ "
- P82 L4: " $y' = y(1 + \ln x) = (1 + x)x^x$ " 改成 " $y' = y(1 + \ln x) = (1 + \ln x)x^x$ "
- P97 L5: "e<sup>½</sup>" 改成 "e<sup>-½</sup>"
- P105 L3: "(4)  $nb^{n-1} < a^n b^n < na^{n-1}(a-b)$ ," 改成 "(4)  $nb^{n-1}(a-b) < a^n - b^n < na^{n-1}(a-b)$ ,"

- P118 L12: "(1)  $\frac{1}{x}$ , x = -1, n阶;" 改成"(1)  $y = \frac{1}{x}$ ,  $x_0 = -1$ , n阶;"
- P118 L13: "(2)  $\ln(1-x)$ ,  $x = \frac{1}{2}$ , n阶;" 改成 "(2)  $y = \ln(1-x)$ ,  $x_0 = \frac{1}{2}$ , n阶;"
- P118 L14: "(3)  $\frac{1}{2}$ (e<sup>x</sup> + e<sup>-x</sup>), x = 0,20阶;" 改成"(3)  $y = \frac{1}{2}$ (e<sup>x</sup> + e<sup>-x</sup>),  $x_0 = 0,20$ 阶;"
- P118 L15: "(4)  $xe^x$ , x = 0, n阶." 改成 "(4)  $y = xe^x$ ,  $x_0 = 0$ , n阶."
- P120 L7: " $f(x) > f(\frac{\pi}{2}) = \frac{\pi}{2}$ " 改成 " $f(x) > f(\frac{\pi}{2}) = \frac{2}{\pi}$ "
- P120 L12: " $f'(x_0) < 0$ ,  $x \in (x_0, x_0 + \delta)$ " 改成 "f'(x) < 0,  $x \in (x_0, x_0 + \delta)$ "
- P120 L14: " $f'(x_0) > 0$ ,  $x \in (x_0, x_0 + \delta)$ " 改成 "f'(x) > 0,  $x \in (x_0, x_0 + \delta)$ "
- P123 L20: "(3)  $\ln(1+x) < x$ , x > 0;" 改成 "(3)  $\ln(1+x) < x$ ,  $x \in (0,+\infty)$ ;"
- P136 L22: "f'(x) > 0" 改成 "f"(x) > 0"
- P136 L27: "10. 设  $\lim_{x\to 0} \frac{x (a + b\cos x)\sin x}{x^k} = A$ ,  $A \neq 0$ , 求常数 a, b, k, A." 改成 "10. 设  $\lim_{x\to 0} \frac{x (a + b\cos x)\sin x}{x^5} = A$ ,  $A \neq 0$ , 求常数 a, b, A."
- P137 L7: "xf(θ(x)x)" 改成 "xf'(θ(x)x)"
- P137 L14: "有且仅有唯一的零点" 改成 "至多有一个零点"
- P137 L22: "f'(a)f'(b) < 0" 改成 " $f'_{+}(a)f'_{-}(b) < 0$ "
- P161 L18: "(2)  $\int \min\{1, x^2, x^3\} dx$ ." 改成 "(2)  $\int \max\{1, x^2, x^3\} dx$ ."
- P175 L2: "例 **6.2.3** 求极限 $\lim_{x\to 0} \frac{\displaystyle\int_{\cos x}^{1} \mathrm{e}^{-t^2\mathrm{d}t}}{x^2}$ ." 改成"例 **6.2.3** 求极限 $\lim_{x\to 0} \frac{\displaystyle\int_{\cos x}^{1} \mathrm{e}^{-t^2\mathrm{d}t}}{x^2}$ ."

• P176 L19: "(1) 
$$\lim_{x\to 0} \frac{\int_0^x \cos t^2 dt}{x}$$
; (2)  $\lim_{x\to 0} \frac{\int_0^x \cos t^2 dt}{x}$ ; (3)  $\lim_{x\to 0} \frac{\left(\int_0^x e^t dt\right)^2}{\int_0^x t e^{2t^2} dt}$ ." 改成

"(1) 
$$\lim_{x \to 0} \frac{\int_0^x \cos t^2 dt}{x}$$
; (2)  $\lim_{x \to 0} \frac{\left(\int_0^x e^t dt\right)^2}{\int_0^x t e^{2t^2} dt}$ ."

• P184 L10: "(2) 
$$\int_0^e x \ln^2 x dx$$
;" 改成 "(2)  $\int_1^e x \ln^2 x dx$ ;"

• P193 L9: "(3) 
$$\int_0^{+\infty} x^2 \ln x dx$$
;" 改成 "(3)  $\int_0^1 x^2 \ln x dx$ ;"

• P193 L15: "(4) 
$$\int_0^{+\infty} \frac{x^m}{x^n + 1} dx$$
;" 改成 "(4)  $\int_0^{+\infty} \frac{x^m}{x^n + 1} dx$   $(n \ge 0)$ ;"

- P195 L17: "其中 $\varphi'(t)$ 和 $\varphi'(t)$ 在[ $\alpha, \beta$ ]上连续" 改成 "其中 $\varphi'(t)$ 和 $\phi'(t)$ 在[ $\alpha, \beta$ ]上连续"
- P196 最后一行图6.6.3中"2xa" 改成 "2πa"

• P198 最后一行"
$$S = \int_{-2}^{4} \left( y + 4 - \frac{1}{2} y^2 \right) dx$$
" 改成 " $S = \int_{-2}^{4} \left( y + 4 - \frac{1}{2} y^2 \right) dy$ "

• P206 L10: "(4) 
$$x^{\frac{3}{2}} + y^{\frac{3}{2}} = a^{\frac{3}{2}} (a > 0)$$
;" 改成 "(4)  $x^{\frac{2}{3}} + y^{\frac{2}{3}} = a^{\frac{2}{3}}$ ;"

• P206 L11: "(5) 
$$\begin{cases} x = a(\cos t + t \sin t), \\ y = a(\sin t - t \sin t), \\ t \in [0, 2\pi]. \end{cases} t \in [0, 2\pi]. " \ \ \, \text{\text{$\text{Z}$}} (5) \begin{cases} x = a(\cos t + t \sin t), \\ y = a(\sin t - t \cos t), \end{cases}$$

• P207 L10: "(2) 
$$x^{\frac{3}{2}} + y^{\frac{3}{2}} = a^{\frac{3}{2}}$$
, 绕 $x$ 轴." 改成 "(2)  $x^{\frac{2}{3}} + y^{\frac{2}{3}} = a^{\frac{2}{3}}$ , 绕 $x$ 轴."

• P207 L24: "(2) 
$$\int_0^{\pi} \frac{\sin \theta d\theta}{\sqrt{1 - 2a\cos \theta + a^2}}$$
;" 改成 "(2)  $\int_0^{\pi} \frac{\sin \theta d\theta}{\sqrt{1 - 2a\cos \theta + a^2}}$  (a > 1);"

- P207 L24: "(5)  $\int_2^e \frac{1 + \ln x}{x^2 \ln x} dx$ ;" 改成 "(5)  $\int_2^e \frac{1 + \ln x}{x^2 \ln^2 x} dx$ ;"
- P208 L14: "曲线y = ax" 改成"曲线y = ax² + bx"
- P211 L28: "微分方程y" 4y' + 4y = 0的通解" 改成 "微分方程y" 4y' + 4y = 0的 解"
- P212 L5: "因而是该方程的通解" 改成"因而是该方程的解"
- P212 L14: "(5)  $y^{(m)} + y'' + y = 0$ ;"  $\partial \mathcal{R}$  "(5)  $y^{(m)} + y'' + y = 0$  (m > 2);"
- P214 L20: "二、齐次微分方程" 改成 "二、常见的可分离变量微分方程"
- P215 L18: "其中 $C = \pm e^{2C_1}$ " 改成 "其中 $C = e^{2C_1}$ "
- P216 L10: "其中C为任意常数." 改成 "其中C为任意常数. 由y(0) = 0知,C = 0. 故 所求特解为 $2xy + x^2 = 0$ ."

• P219 L18: "
$$y' = \frac{C'(x) - C(x)}{x^2}$$
" 改成 " $y' = \frac{C'(x)x - C(x)}{x^2}$ "

- P219 L20: " $C'(x) = x \sin x$ " 改成 " $C'(x) = \sin x$ "
- P219 L22: " $C(x) = -x \cos x + \sin x + \widetilde{C}$ " 改成 " $C(x) = -\cos x + \widetilde{C}$ "

• P220 L2: "
$$y = \frac{\widetilde{C}}{x} + \frac{\sin x}{x} - \cos x$$
" 改成 " $y = \frac{-\cos x + \widetilde{C}}{x}$ ",

- P220 L27: "解方程 $\frac{dy}{dx} 2xy = xy^2$ " 改成 "解方程 $\frac{dy}{dx} \frac{2}{x}y = xy^2$ "
- P225 L6: "这是关于p的一阶线性微分方程" 改成 "这是关于p的一阶微分方程"
- P226 L4: "(4) y" 4y = x + 1" 改成 "(4) y" 4y' = x"
- P227 L24: "Y是方程(7.4.2)的一个通解" 改成 "Y是方程(7.4.2)的通解"
- P231 L5: "y" 2y' 3 = 0" 改成 "y" 2y' 3y = 0"

• P235 L29: "
$$y^* = \frac{1}{10}x - \frac{1}{25}$$
" 改成 " $y^* = x\left(\frac{1}{10}x - \frac{1}{25}\right)e^{x}$ "

• P231 L12: "
$$y'' + py' + q = f(x)$$
" 改成 " $y'' + py' + qy = f(x)$ "

• P231 L15: "
$$y'' + py' + q = 0$$
" 改成 " $y'' + py' + qy = 0$ "

• P238 L12: "
$$y = e^{-3x} + \left(1 + \frac{4}{x}\right)e^{x}$$
" 改成 " $y = e^{-3x} + \left(1 + \frac{x}{4}\right)e^{x}$ "

• P245 L12: "(8) 
$$y'' - y' = 4xe^x$$
,  $y'(0) = 1$ ,  $y(0) = 0$ " 改成 "(8)  $y'' - y = 4xe^x$ ,  $y'(0) = 1$ ,  $y(0) = 0$ "

• P249 L13: "(4) 
$$-\frac{1}{4}$$
;" 改成 "(4) 0;"

• P249 L21: "(2) 
$$x = k\pi$$
 ( $k \in \mathbb{Z}$ ) 是可去间断点." 改成 "(2)  $x = k\pi$  ( $k \in \mathbb{Z}$ ) 是跳跃间断点."

• P250 L13: "(5) 
$$y' = \frac{\arcsin \sqrt{x}}{2\sqrt{x}} + \frac{1}{2\sqrt{1-x}} (x \neq 0);$$
 (6)  $y' = \frac{\arccos \sqrt{x}}{2\sqrt{x}} - \frac{1}{2\sqrt{1-x}} (x \neq 0);$  " $(5) y' = \frac{\arcsin \sqrt{x}}{2\sqrt{x}} + \frac{1}{2\sqrt{1-x}} (0 < x < 1);$  (6)  $y' = \frac{\arccos \sqrt{x}}{2\sqrt{x}} - \frac{1}{2\sqrt{1-x}} (0 < x < 1);$  (7)  $(5) y' = \frac{\arccos \sqrt{x}}{2\sqrt{x}} - \frac{1}{2\sqrt{1-x}} (0 < x < 1);$  (8)  $(5) y' = \frac{\arccos \sqrt{x}}{2\sqrt{x}} - \frac{1}{2\sqrt{1-x}} (0 < x < 1);$ 

• P250 L21: "4. (1) 
$$y' = x \sin x \left(\cos x \ln x + \frac{\sin x}{x}\right)$$
;" 改成 "4. (1)  $y' = x^{\sin x} \left(\cos x \ln x + \frac{\sin x}{x}\right)$ ;"

• P251 L2: "(3) 
$$dy = \frac{1}{x\sqrt{x^2 - 1}} dx$$
; (4)  $dy = \frac{1}{|x|} dx$ ; " $\partial x$ " " $\partial x$ "

- P251 L13: "(8)  $y'' = (4x^2 2)e^{-x^2} \arcsin x 4xe^{-x^2}(1 x^2)^{-\frac{1}{2}} \frac{1}{2}e^{-x^2}(1 x^2)^{-\frac{3}{2}}$ ;" 改成 "(8)  $y'' = (4x^2 - 2)e^{-x^2} \arcsin x - 4xe^{-x^2}(1 - x^2)^{-\frac{1}{2}} + xe^{-x^2}(1 - x^2)^{-\frac{3}{2}}$ ;"
- P252 L3: "2.  $f'_{+}(0) = 0$ ,  $f'_{-}(0) = 2$ , f'(0) 不存在,  $\lim_{x \to 0} f'(x)$  不存在." 改成 "2.  $f'_{+}(0) = 1$ ,  $f'_{-}(0) = -\infty$ , f'(0) 不存在,  $\lim_{x \to 0} f'(x) = 1$ ."
- P252 L8: "(3)  $y' = \left(\ln\left|1 + \frac{1}{x}\right| \frac{1}{x+1}\right) \left(1 + \frac{1}{x}\right)^x$ ;" 改成

  "(3)  $y' = \left(\ln\left(1 + \frac{1}{x}\right) \frac{1}{x+1}\right) \left(1 + \frac{1}{x}\right)^x$ ;"
- P252 L9: "(4)  $y' = \frac{\cos x(2 + \cos^2 x \sin^2 x + \sin^4 x \cos^4 x)}{(1 + \cos^2 x)^{\frac{1}{2}}(1 + \sin^2 x)^{\frac{3}{2}}}$ ." 改成

  "(4)  $y' = \frac{|\sin x|\cos x(1 + \cos 2x \sin^4 x)}{\sin x(1 + \cos^2 x)^{\frac{1}{2}}(1 + \sin^2 x)^{\frac{3}{2}}}$ ."
- P253 L1: " $F(x) = e^{f(x)} \sin x$ " 改成 " $F(x) = e^{-f(x)} \sin x$ "
- P253 L7: "(23) -1;" 改成 "(23) 0;"
- P253 L13: "(2)  $\ln(1-x) = -\ln 2 2\left(x \frac{1}{2}\right) + 2\left(x \frac{1}{2}\right)^2 \frac{8}{3}\left(x \frac{1}{2}\right)^3 + \cdots$  $+ (-1)^n \frac{2^n}{n}\left(x - \frac{1}{2}\right)^n + o\left(\left(x - \frac{1}{2}\right)^n\right);$ " 改成

  "(2)  $\ln(1-x) = -\ln 2 - 2\left(x - \frac{1}{2}\right) - 2\left(x - \frac{1}{2}\right)^2 - \frac{8}{3}\left(x - \frac{1}{2}\right)^3 - \cdots$   $-\frac{2^n}{n}\left(x - \frac{1}{2}\right)^n + o\left(\left(x - \frac{1}{2}\right)^n\right);$ "
- P253 L16: "(4)  $xe^x = x + x^2 + \frac{x^3}{2!} + \dots + \frac{x^n}{(n-1)} + o(x^n)$ ." 改成

"(4) 
$$xe^x = x + x^2 + \frac{x^3}{2!} + \dots + \frac{x^n}{(n-1)!} + o(x^n)$$
."

- P254 L22: "(2) 水平渐近线为y = 1,无垂直渐近线,斜渐近线为y = x + 3." 改成 "(2) 无水平渐近线,垂直渐近线为x = 0,斜渐近线为y = x + 3."
- P255 L12: "10.  $a = \frac{4}{3}$ ,  $b = -\frac{1}{3}$ , k = 5,  $A = \frac{1}{30}$ ." 改成 "10.  $a = \frac{4}{3}$ ,  $b = -\frac{1}{3}$ ,  $A = \frac{1}{30}$ ."
- P255 L29: "(4) ln ln |x| + C;" 改成 "(4) ln |ln x| + C;"
- P256 L4: "(15)  $\ln \left| \tan \frac{x}{2} \right| + C$ ;" 改成 "(15)  $\ln \left| \sin \frac{1}{x} \right| + C$ ;"
- P256 L5: "(18) (arctan  $\sqrt{x}$ )<sup>2</sup> + C;" 改成 "(18)  $\frac{\sqrt{2}}{2}$  arctan  $\frac{\sqrt{2}(x^2-1)}{2x}$  + C;"
- P256 L6: "(19)  $\frac{1}{\sqrt{2}} \arctan \frac{x^2 1}{\sqrt{2}x} + C$ ." 改成 "(19)  $-\frac{1}{2} \ln^2(1 + \frac{1}{x}) + C$ ."
- P256 L7: "2. (1)  $-2 \cot 2x + C$ ;" 改成 "2. (1)  $\frac{2x^2 1}{x\sqrt{1 x^2}} + C$ ;"
- P256 L25: "(12)  $-\frac{x}{2\sin^2 x} \cot x + C$ ." 改成 "(12)  $-\frac{x}{2\sin^2 x} \frac{1}{2}\cot x + C$ ."
- P256 L26: "(13)  $\frac{1}{4} \tan x \sec^2 x + \frac{3}{8} (\sec x \tan x + \ln|\sec x + \tan x|) + C$ ." 改成 "(13)  $\frac{1}{4} \tan x \sec^3 x + \frac{3}{8} (\sec x \tan x + \ln|\sec x + \tan x|) + C$ ."
- P257 L11: "(9)  $\ln|x-1| \frac{1}{2}\ln(x^2+1) \arctan x + \frac{1}{1+x^2} + C$ ;" 改成 "(9)  $\ln\left|\frac{x-1}{x+1}\right| + C$ ;"

- P257 L21: "(4)  $\ln(e^x + \sqrt{e^{2x} 1}) + \arcsin e^x + C$ ;" 改成 "(4)  $\ln(e^x + \sqrt{e^{2x} - 1}) + \arcsin e^{-x} + C$ ;"
- P258 L7: "(4)  $\frac{1}{2} \ln \left(2x^2 + 3 + 2\sqrt{1 + 3x^2 + x^4}\right) + \frac{1}{2} \ln \left(\frac{3}{2} + \frac{\sqrt{1 + 3x^2 + x^4}}{x^2}\right) + C;$ " 改成 "(4)  $\frac{1}{2} \ln \left(2x^2 + 3 + 2\sqrt{1 + 3x^2 + x^4}\right) + \frac{1}{2} \ln \left(\frac{3}{2} + \frac{1 + \sqrt{1 + 3x^2 + x^4}}{x^2}\right) + C;$ "
- P258 L9: "(6)  $2x \sqrt{e^x 1} \sqrt[4]{e^x 1} + 4 \arctan \sqrt{e^x 1} + C$ ;" 改成 "(6)  $(2x 4) \sqrt{e^x 1} + 4 \arctan \sqrt{e^x 1} + C$ ;"
- P258 L13: "(10)  $\arctan x + \frac{1}{3} \arctan^3 x + C$ ;" 改成 "(10)  $\arctan x + \frac{1}{3} \arctan x^3 + C$ ;"
- P258 L18: "4.  $x \frac{1}{2}x^2 + C$ ,  $|x| \le 1$ ." 改成 "4.  $x \frac{1}{2}x^2 + C$  ( $0 \le x \le 1$ )."
- P258 L26: "(4) ×." 改成 "(4) √."
- P259 L11: "(4) -e<sup>y²</sup> sin x²;" 改成 "(4) -e<sup>y²</sup> sin² x;"
- P259 L12: "2. (1) 1; (2)  $\frac{1}{2}$ ; (3) 2." 改成"2. (1) 1; (2) 2."
- P259 L14: "(8)  $\frac{4}{3}$ ; (9)  $2\sqrt{2}$ ;" 改成"(8)  $2\sqrt{2}$ ; (9)  $\frac{4}{3}$ ;"
- P260 L7: "2. (1)  $-66\frac{6}{7}$ ;" 改成 "2. (1)  $\frac{4}{15}$ ;"
- P260 L17: "(2)  $\frac{\pi^4}{16} \frac{\pi^2}{3} + 24$ ."  $\stackrel{?}{\triangleright}$   $\stackrel{}$   $\stackrel{?}{\triangleright}$   $\stackrel{?}{\triangleright}$
- P260 L21: "(5)  $\frac{8}{3}$ ;" 改成 "(5)  $\sqrt{3}$ ;"

- P260 L22: "(8) (-1)<sup>n</sup> · 2." 改成 "(8) 2."
- P261 L2: "(3) 2 +  $\sqrt{2}$  ln( $\sqrt{2}$  + 1);" 改成 "(3) 1 +  $\frac{\sqrt{2}}{2}$  ln( $\sqrt{2}$  + 1);"
- P261 L11: "8.  $\frac{4}{3}\pi r^4$ ." 改成 "8.  $\frac{4}{3}\pi r^4 \rho g$ ."
- P262 L2: "(2) 一阶线性" 改成 "(2) 一阶非线性"
- P262 L10: "(2)  $y = -x \ln |C \ln x|$ " 改成 "(2)  $e^{-xy} + \ln |x| = C$ "
- P263 L22: "经 $\frac{5}{24}$ a秒将被鱼雷击中" 改成 "经 $\frac{5}{24a}$ 秒将被鱼雷击中"
- P263 L25: "(4)  $\ln y^2 y^2 = 2x 2 \arctan x + C$  及y = 0" 改成 "(4)  $\ln y^2 y^2 = 2x 2 \arctan x + C$ "
- P263 L26: "(5) 当 $\sin \frac{y}{2} \neq 0$ 时,通解为 $\ln \left| \tan \frac{y}{4} \right| = C 2 \sin \frac{x}{2}$ ;" 改成 "(5)  $\ln \left| \tan \frac{y}{4} \right| = C 2 \sin \frac{x}{2}$ ;"
- P263 L27: "当 $\sin \frac{y}{2} = 0$ 时,通解为 $y = 2k\pi, k \in \mathbb{Z}$ ;" 删掉