高数 8-2 真题测试 ~



高数8-3基础...

1. (89-3) 已知 $z = a^{\sqrt{x^2 - y^2}}$, 其中 a > 0, $a \ne 1$, 求 dz.

2. (94-1) 设
$$u = e^{-x} \sin \frac{x}{y}$$
, 则 $\frac{\partial^2 u}{\partial x \partial y}$ 在点 $\left(2, \frac{1}{\pi}\right)$ 处的值为_____.

3. (98-1) 设
$$z = \frac{1}{x} f(xy) + y\varphi(x+y)$$
, f, φ 具有二阶连续导数,则 $\frac{\partial^2 z}{\partial x \partial y}$ 当 $\frac{f(xy) + y\varphi(x+y) + y\varphi(x+y)}{\partial x \partial y}$ = $-\frac{1}{x^2} f(xy) + \frac{1}{x} f(xy) \cdot xy + f(xy)$ + $\frac{1}{x} f(xy) \cdot xy + \frac{1}{x} f(xy) \cdot xy + \frac{$

求
$$\frac{\partial^2 z}{\partial x \partial y}$$
.

5. (03-3) 设
$$(u,v)$$
 具有二阶连续偏导数,且满足 $\frac{\partial^2 f}{\partial u^2} + \frac{\partial^2 f}{\partial v^2} = 1$,又

$$g(x,y) = f\left[xy, \frac{1}{2}(x^2 - y^2)\right], \quad \#\frac{\partial^2 g}{\partial x^2} + \frac{\partial^2 g}{\partial y^2} \cdot \frac{\partial^2 g}{\partial x^2} + \frac{\partial^2 g}{\partial x^2} + \frac{\partial^2 g}{\partial y^2} \cdot \frac{\partial^2 g}{\partial y^2} \cdot \frac{\partial^2 g}{\partial y^2} + \frac{\partial^2 g}{\partial y^2} \cdot \frac{\partial^2 g}{\partial y^2} \cdot \frac{\partial^2 g}{\partial y^2} + \frac{\partial^2 g}{\partial y^2} \cdot \frac{\partial^$$



(A)
$$\frac{\partial^2 u}{\partial x^2} = -\frac{\partial^2 u}{\partial y^2}$$
. (B) $\frac{\partial^2 u}{\partial x^2} = \frac{\partial^2 u}{\partial y^2}$.

(B)
$$\frac{\partial^2 u}{\partial x^2} = \frac{\partial^2 u}{\partial y^2}$$
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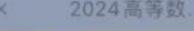
(C)
$$\frac{\partial^2 u}{\partial x \partial y} = \frac{\partial^2 u}{\partial y^2}$$
.

(D)
$$\frac{\partial^2 u}{\partial x \partial y} = \frac{\partial^2 u}{\partial x^2}$$
.

(D)
$$\frac{\partial^2 u}{\partial x \partial y} = \frac{\partial^2 u}{\partial x^2}$$
. $\frac{\partial^2 u}{\partial y^2} = \frac{\partial^2 u}{\partial x^2}$.

高数8-2 真题测试~





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8-1高数基础.



























7. (06-3) 设函数 f(u) 可微,且 $f'(0) = \frac{1}{2}$,则 $z = f(4x^2 - y^2)$ 在点 (1,2) 处的全微分

$$dz|_{(1,2)} = 4dx - 2dy$$

8. (07-2) 已知函数 f(u) 具有一阶导数,目 f'(0)=1 函数 v=v(x) 由方程 $v-xe^{y-1}=$

所确定。设 $z = f(\ln y - \sin x)$, 求 $\frac{dz}{dx}$ $\frac{d^2z}{dx}$ $\frac{dz}{dx} = f(\ln y - \sin x)$. ($\frac{1}{y}$, $\frac{y}{y}$ - $\cos x$) 、 $\frac{dz}{dx}$ $\frac{d^2z}{x=0}$ $\frac{dx^2}{x=0}$ $\frac{dx}{dx}$ $\frac{dx}{x=0}$ $\frac{dx}{(1-xe^{y-1})^2}$ 帝裁=filmy-sinx)(fy-cosx)+filmy-sinx)(中型)+安数+sinx) 形的 毅 1x=0=1 9. (01-3) 设 u = f(x, y, z) 有连续的一阶偏导数,又函数 y = y(x) 及 z = z(x) 分别由一列

$$e^{xy} - xy = 2 i \frac{dx}{dx} = -\frac{1}{F_y} = -\frac{1}{x}$$

$$e^{x} = \frac{\sin(x-2)}{x-2} \cdot (1-\frac{dx}{dx}) = \frac{dx}{dx} = \frac{(x-2)e^{x} - \sin(x-2)}{\sin(x-2)}$$

$$e^{x} = \frac{\sin(x-2)}{x-2} \cdot (1-\frac{dx}{dx}) = \frac{dx}{dx} = \frac{(x-2)e^{x} - \sin(x-2)}{\sin(x-2)}$$

$$\frac{dy}{dx} = f_1 + f_2 \cdot \frac{dy}{dx} + f_3 \cdot \frac{dx}{dx} = f_1 - \frac{y}{x} + f_2 + f_3 - \frac{(x-2)e^{x}}{\sin(x-2)} = f_3$$

10. (04-2) 设函数 z = z(x, y) 由方程 $z = e^{2x-3z} + 2y$ 确定,则 $3\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} =$ _______









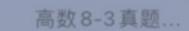
高数正式笔记

2024高等数...





































11. (04-3) 函数 f(u,v) 由关系式 f[xg(y),y]=x+g(y) 确定, 其中函数 g(y) 可微, 且

$$g(y) \neq 0$$
, $\mathbb{M} \frac{\partial^2 f}{\partial u \partial v} = \frac{g'(v)}{\partial u \partial v}$

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