

## 数学分析 B2 第四次作业

9.2.7  $\frac{\pi}{2}, \frac{\pi}{6}, \frac{\pi}{3}$ .

9.2.8 略.

9.2.9 (4)  $z_{xx} = 2a^2 \cos 2(ax + by), z_{xy} = 2ab \cos 2(ax + by), z_{yy} = 2b^2 \cos 2(ax + by)$ .

$$(6) z_{xx} = \frac{xy^3}{(1-x^2y^2)^{3/2}}, z_{xy} = \frac{1}{(1-x^2y^2)^{3/2}}, z_{yy} = \frac{x^3y}{(1-x^2y^2)^{3/2}}$$

9.2.11 (3) 略.

9.2.12 要先计算  $(x, y) \neq (0, 0)$  处和  $(x, y) = (0, 0)$  处的二阶偏导数均存在, 再证明其不连续.

$$9.2.13 (3) du = -\frac{2t}{(s-t)^2} ds + \frac{2s}{(s-t)^2} dt$$

$$(6) dz|_{(0,0)} = 0, dz|_{(1,1)} = -4dx - 4dy.$$

9.2.16 注意可微性要用定义验证.

9.2.17 同上.

$$9.2.19 (3) u_r = \frac{2x}{x^2+y^2} e^{t+s+r}, u_s = \frac{2x}{x^2+y^2} e^{t+s+r} + \frac{16y}{x^2+y^2} s, u_t = \frac{2x}{x^2+y^2} e^{t+s+r} + \frac{16y}{x^2+y^2} t.$$

$$(4) u_x = e^{ax} \sin x.$$

9.2.22  $\frac{1}{2}$ . 注意方向导数是一个数.

9.2.31 略.

9.2.38  $r$ .

9.3.1 (1) 用隐函数定理.  $-\frac{5}{4}, -\frac{21}{32}$ .

$$9.3.2 (1) \frac{dy}{dx} = -\frac{y \cos xy - ye^{xy} - 2xy}{x \cos xy - xe^{xy} - x^2}.$$

$$(6) z_x = -\frac{F_1 + F_2 + F_3}{F_3}, z_y = -\frac{F_2 + F_3}{F_3}.$$

9.3.3 6, -6.