

接平面

1 次の曲面の，指定された点における接平面を求めよ。

(1) $z = x^2 + y^2$, $(x, y, z) = (1, 1, 2)$

(2) $z = x^2 + y^2$, $(x, y, z) = (1, -1, 2)$

(3) $z = x^2 + y^2$, $(x, y, z) = (0, 0, 0)$

(4) $z = xy$, $(x, y, z) = (1, 1, 1)$

(5) $z = xy$, $(x, y, z) = (-2, 3, -6)$

(6) $x^2 + y^2 + z^2 = 1$, $(x, y, z) = (0, 0, 1)$

(7) $x^2 + y^2 + z^2 = 1$, $(x, y, z) = \left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{3}}, \frac{1}{\sqrt{6}}\right)$

(8) $x^2 + y^2 + z^2 = 1$, $(x, y, z) = \left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{3}}, -\frac{1}{\sqrt{6}}\right)$

(9) $z = \sin(xy)$, $(x, y, z) = \left(\frac{1}{2}, \frac{\pi}{3}, \frac{1}{2}\right)$

(10) $z = x^3 - 2x^2y + 5xy^2 + 4y^3 + 2x - 3$, $(x, y, z) = (1, -1, 3)$