

## 14.4 Tangent Planes and Linear Approximations

### ◎ 單選擇題

1. The equation of the **tangent plane** to the surface  $\cos(xyz) = x^2y^2 + z$  at the point  $(1, -1, 0)$  is
- (A)  $z = -2x + 2y + 4$  ;  
(B)  $z = -x + y + 2$  ;  
(C)  $z = \frac{1}{2}x - \frac{1}{2}y - 1$  ;  
(D)  $z = \frac{1}{4}x - \frac{1}{4}y - \frac{1}{2}$  .

Ans: A [103 學年度]

2. Let  $S$  be the level surface  $x \ln y + y \ln z + xyz = 0$  and  $\langle a, b, -1 \rangle$  be the **normal vector** of the tangent plane to  $S$  at the point  $(0, 1, 1)$ . Then, the pair  $(a, b)$  is equal to
- (A)  $(1, 0)$ ;      (B)  $(0, 1)$ ;      (C)  $(-1, 0)$ ;      (D)  $(0, -1)$ .

Ans: C [105 學年度]

### ◎ 填空題

1. The **tangent plane equation** of the surface  $\sin(xyz) = x + 2y + 3z$  through the point  $(2, -1, 0)$  is     (4)    .

Ans:  $x + 2y + 5z = 0$  or  $(x - 2) + 2(y + 1) + 5z = 0$  [104 學年度]