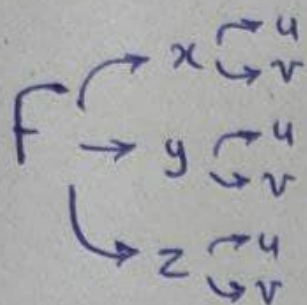


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اشکان شکلیا



(۴) الف

$$\Rightarrow \frac{\partial F}{\partial r} = \frac{\partial F}{\partial x} \frac{\partial x}{\partial r} + \frac{\partial F}{\partial y} \frac{\partial y}{\partial r} + \frac{\partial F}{\partial z} \frac{\partial z}{\partial r}$$

$$\frac{\partial x}{\partial r} = 1, \quad \frac{\partial y}{\partial r} = -1, \quad \frac{\partial z}{\partial r} = u$$

همچنین:

$$u = r = a \Rightarrow \left. \frac{\partial F}{\partial r} \right|_{u=r=a} = (b-1)x + b(-1) + a(b+1)$$

$$= b-1-b+ab+a = ab+a-1$$

$$a=3, b=0 \Rightarrow \left. \frac{\partial F}{\partial r} \right|_{u=r=a} = 3 \times 0 + 3 - 1 = 2$$

ب) تابع  $F$  را به شکل دوبعدی تعریف می کنیم:

$$F(x, y, z) = e^{axyz} + bxz + (c+1)yz - (2c+3)$$

$$\nabla F = (ayze^{axyz} + bz, axze^{axyz} + (c+1)z, axye^{axyz} + bx + (c+1)y) \Rightarrow \nabla F(0, 1, 2) = (2(a+b), 2(c+1), c+1)$$

معادله صفر:  $2(a+b)x + 2(c+1)(y-1) + (c+1)(z-2) = 0$

معادله صفر:  $4x + 2y + z = 4$