

Задача, задание 4

$$U = e^{x^2+y^2+z^2} \quad \vec{C}(4, -13, -16) \quad L(-16, 4, -13)$$

$$U'_x = 2x e^{x^2+y^2+z^2}$$

$$U'_y = 2y e^{x^2+y^2+z^2}$$

$$U'_z = 2z e^{x^2+y^2+z^2}$$

$$\text{grad } U (-32e^{441}; 8e^{441}; -26e^{441}) \text{ в т.ке } d$$

$$U'_{\vec{C}} =$$

$$|\vec{C}| = \sqrt{4^2 + (-13)^2 + (-16)^2} = \sqrt{16 + 169 + 256} = \sqrt{441} = 21$$

$$\vec{C}_0 = \left(\frac{4}{21}; -\frac{13}{21}; -\frac{16}{21} \right)$$

$$\begin{aligned} (U'_{\vec{C}}) &= \left(-\frac{32e^{441} \cdot 4}{21} + 8e^{441} \cdot \left(-\frac{13}{21}\right) + \left(-26e^{441} \cdot \left(-\frac{16}{21}\right)\right) \right) = \\ &= \frac{-128e^{441}}{21} - \frac{104e^{441}}{21} + \frac{416e^{441}}{21} = \frac{128e^{441}}{21} \end{aligned}$$