Special Problem 2-5.5

The air **temperature** in a given volume is described by the **scalar** field:

$$T(\bar{r}) = x^2 y + 3yz - 2xz$$

Say **you** are at a **location** denoted by position vector:

$$\bar{r} = 2\hat{a}_x + \hat{a}_y + 2\hat{a}_z$$

Say also that you are **cold**. In what **direction** should you move if you want to get **warm** the quickest? In other words, in what **direction** will the **increase** in temperature over a given distance be the **largest**? Express this direction as a **unit vector**.