

8.5) A MOUNTAIN CAN BE DESCRIBED BY THE FUNCTION $h(x, y)$ WHICH GIVES THE HEIGHT ABOVE SEA LEVEL OF A POINT THAT IS x EAST & y NORTH OF THE ORIGIN.

a) DESCRIBE THE MEANING OF $\frac{\partial h}{\partial x}$ & $\frac{\partial h}{\partial y}$ IN WORDS.

$\frac{\partial h}{\partial x}$ IS THE CHANGE IN HEIGHT IN THE EASTWARD DIRECTION, SO ITS THE EAST SLOPE WITH AN UP-HILL SLOPE IF ITS POSITIVE AND DOWNHILL FOR NEGATIVE

$\frac{\partial h}{\partial y}$, SIMILARLY, IS THE SLOPE TO THE NORTH.

b) IF $\frac{\partial h}{\partial y}$ IS POSITIVE, WHAT DOES IT MEAN FOR A HIKER WALKING DUE NORTH?

IT MEANS THE HIKER IS WALKING UP HILL!

c) WHAT DOES IT MEAN IF HE IS WALKING DUE NORTH BUT $\frac{\partial h}{\partial y} = 0$ AND $\frac{\partial h}{\partial x}$ IS POSITIVE?

THIS MEANS THE HIKER IS WALKING ALONG A FLAT PATH ON A SLOPE THAT RISES TO HIS EAST.

A FOLLOWING HIKER WOULD SEE

