$$Grad(f) = \nabla f = \nabla f(x,y)$$

$$\nabla f = < \frac{\partial f}{\partial x}, \frac{\partial f}{\partial y} >$$

$$GradientDescribesLocalMin/Max,$$

$$i.e. 3-DimensionalOptimization$$

$$v = < v_1, v_2 >$$

$$HowDoesTheFunction: x = f(x,y) ChangeAsYouMoveAlongTheVector: v?$$

$$D_v f = \nabla f \bullet v$$

$$\nabla f = < 2x + 2y, 2x > |_{(1,-2)}$$