Two Variable Functions

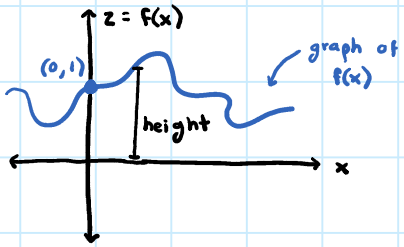
Wednesday, May 31, 2023 8:56 AM

- 1 variable function

  - $f(x) = e^{x^2} + x^3\cos(x)$

    ↓ one variable

  $f(0) = 1$



- 2 variable functions

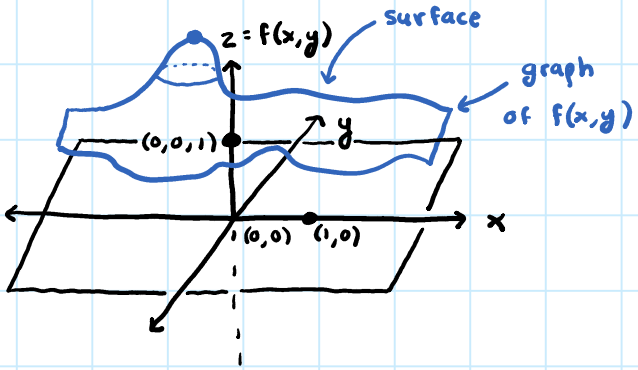
  - $f(x,y) = e^{xy} + xy^3\cos(x+y)$

    x y

  @ $(0,0)$ = $f(0,0) = 1$

  @ $(\pi,0)$ = $f(\pi,0) = 1$

  @ $(1,\pi)$ = $f(1,\pi) = e^{\pi} + \pi^3\cos(1+\pi)$

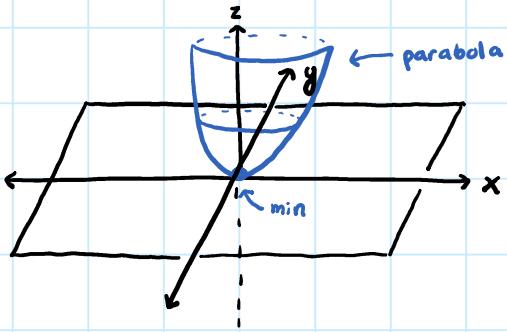


* plug 2 variables → get 1 value *

examples :

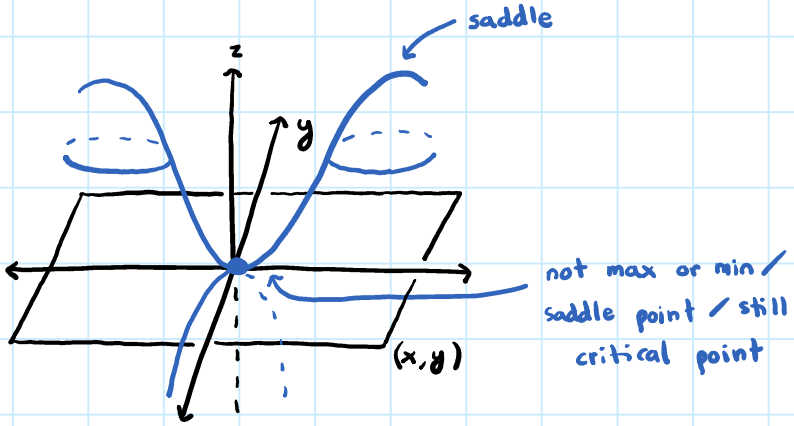
1) $f(x,y) = x^2 + y^2$

* both + → negative parabola w/ max *



2) $f(x,y) = x^2 - y^2$

↑ new type of critical point

↓

saddle point