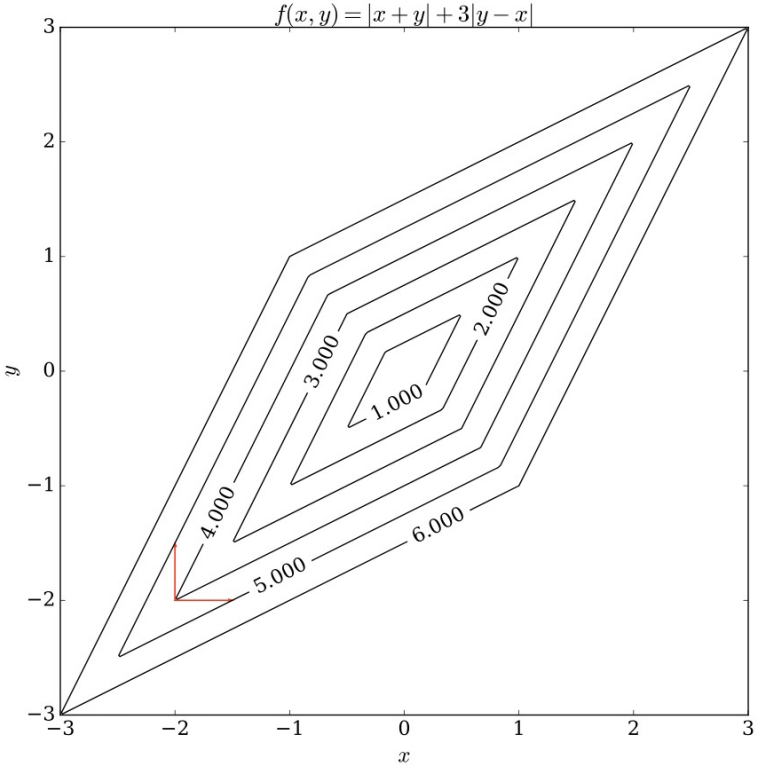
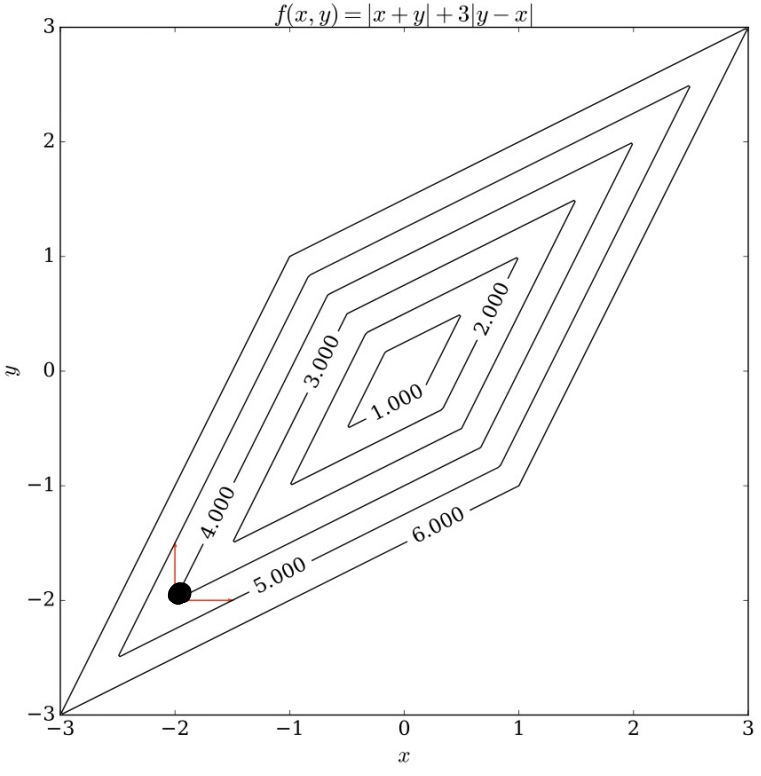
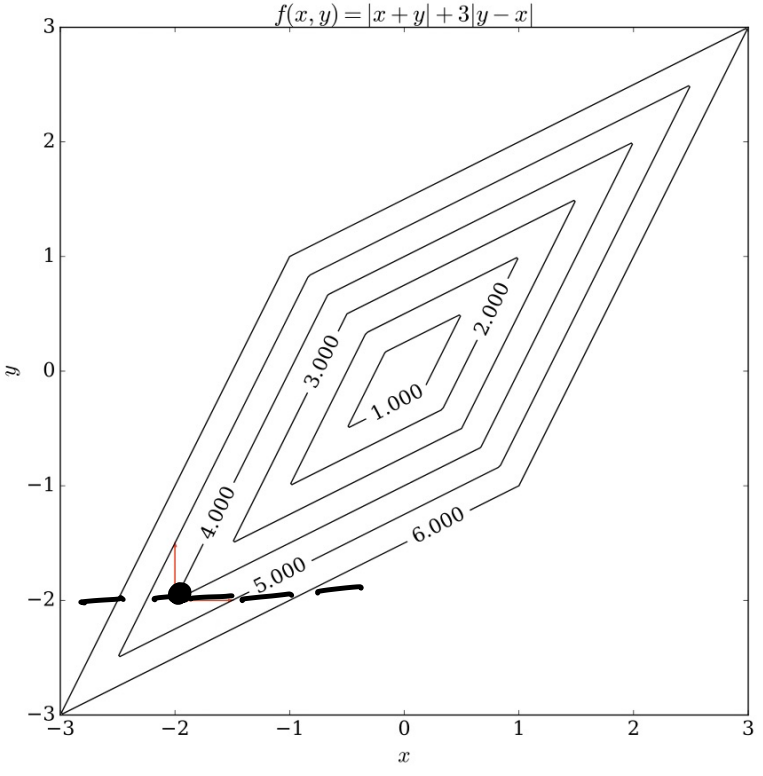
FAILURE OF COORDINATE DESCENT





FAILURE OF COORDINATE DESCENT

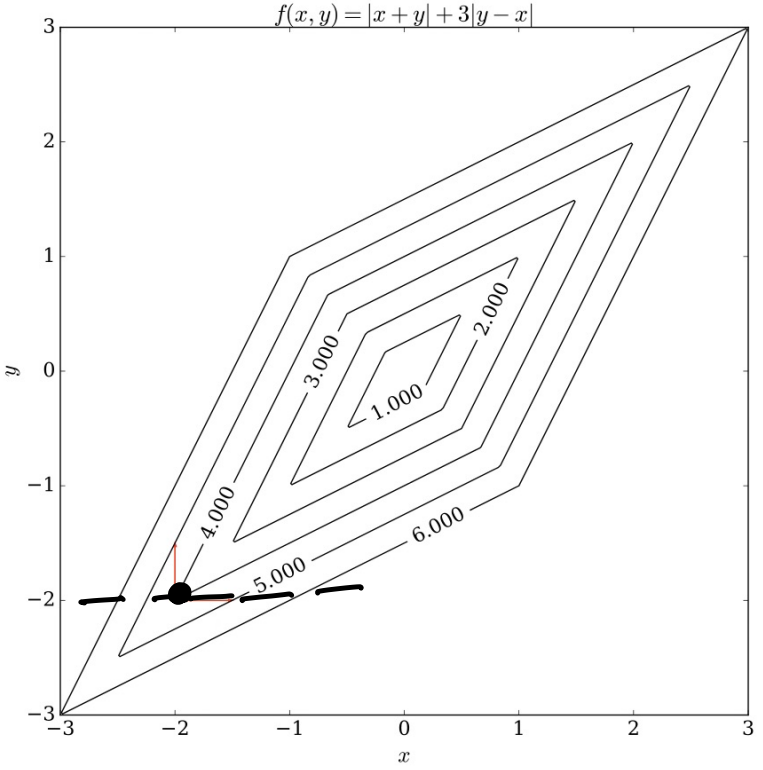
START WITH $(x, y) = (-2, -2)$



FAILURE OF COORDINATE DESCENT

START WITH $(x, y) = (-2, -2)$

FIX $y = -2$, OPTIMIZE ABOUT x.

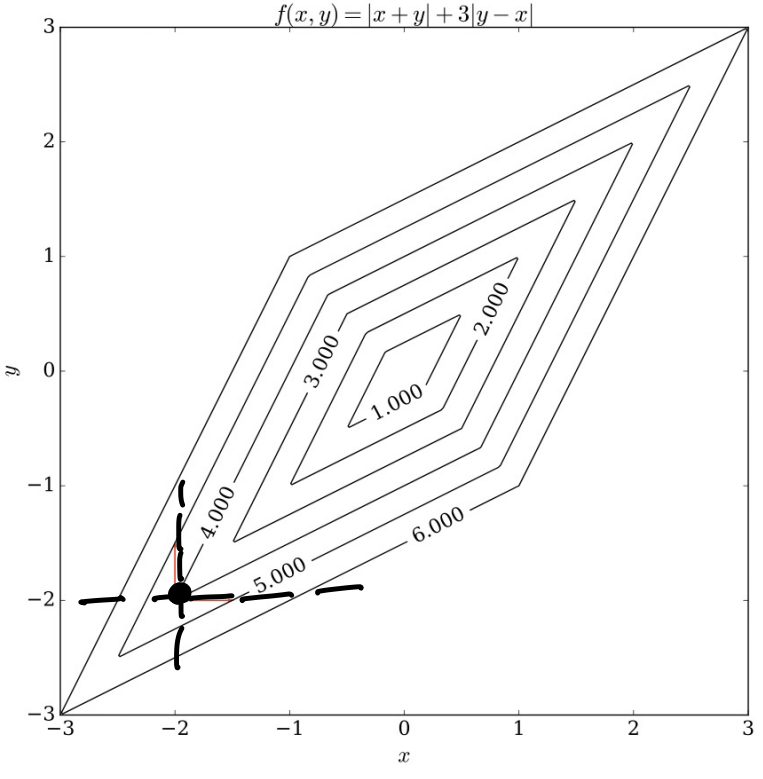


FAILURE OF COORDINATE DESCENT

START WITH $(x, y) = (-2, -2)$

FIX $y = -2$, OPTIMIZE ABOUT x.

OBJECTIVE INCREASES IN BOTH DIRECTIONS



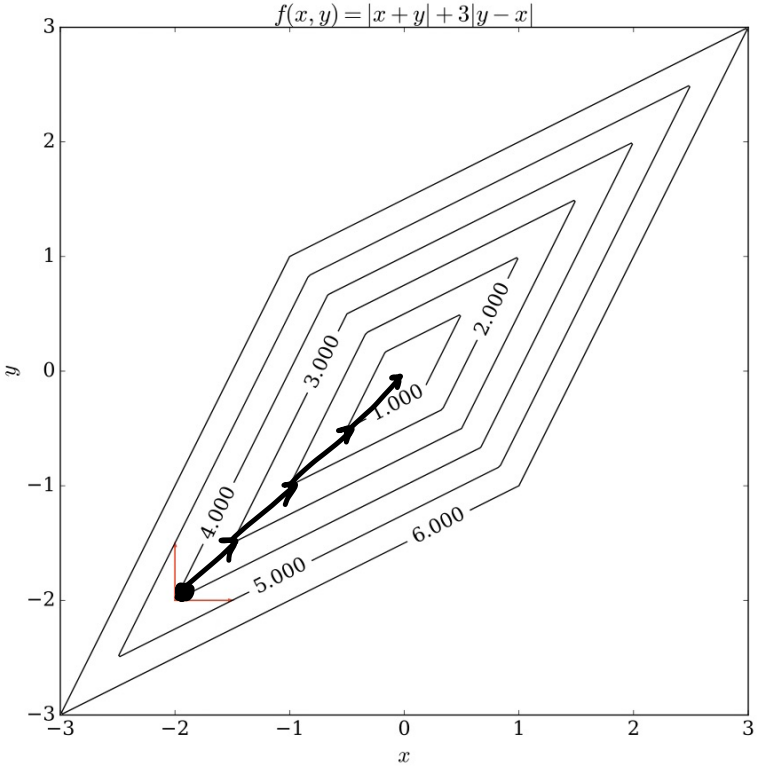
FAILURE OF COORDINATE DESCENT

START WITH $(x, y) = (-2, -2)$

FIX $y = -2$, OPTIMIZE ABOUT x.

OBJECTIVE INCREASES IN BOTH DIRECTIONS

SIMILAR IF WE FIX x and OPTIMIZE ABOUT y.



GRADIENT DESCENT WILL WORK!

- NEED SIMULTANEOUS UPDATE IN BOTH COORDINATES