OR-HW8

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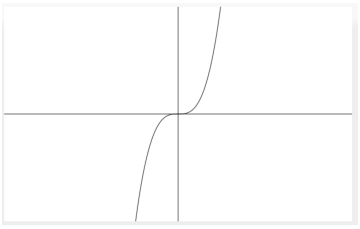
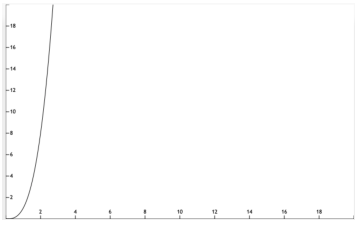
April 30 2020

1. Problem 3

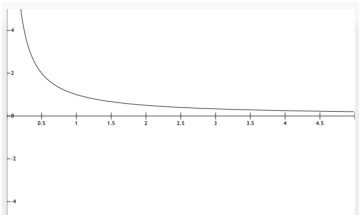
   (a) neither

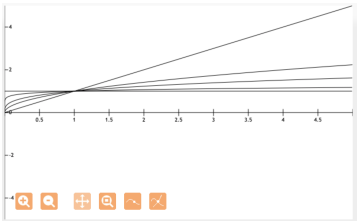
   (b) convex

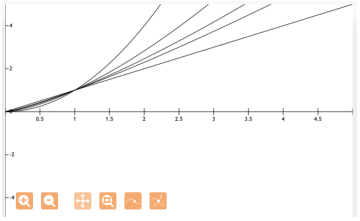
   (c) convex

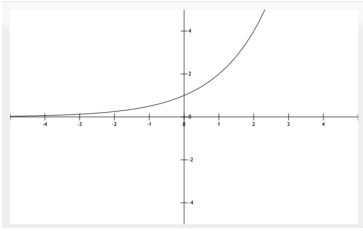
   (d) concave

(e) convex



(f) convex



2. Problem 6

(a) Yes, the region is convex.

(b) Because one of the constraint is $x + y = 1/2$, so we replace y as $1/2 - x$, and since $y \geq 0$,we can set a new constraint for x as $0 \leq x \leq 1/2$.

(c) $f(x) = 1/2x - x^2$
$f'(x) = 1/2 - 2x$, to find optimal , $f'(x)$ must be 0. We can find that x = 1/4 is the solution.