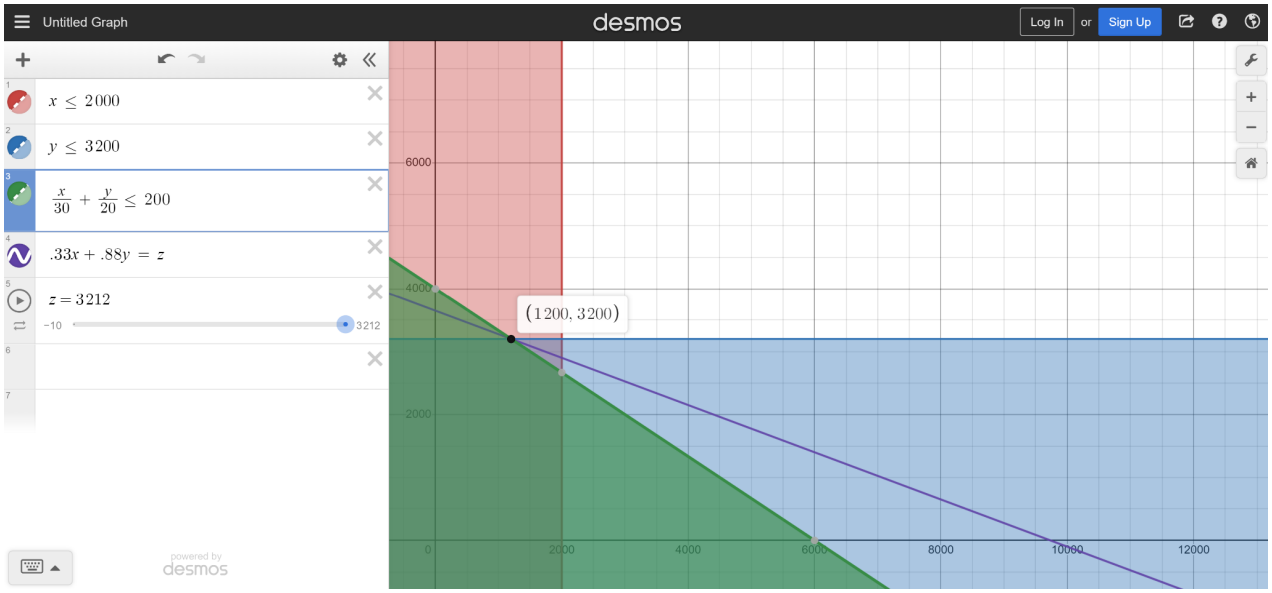
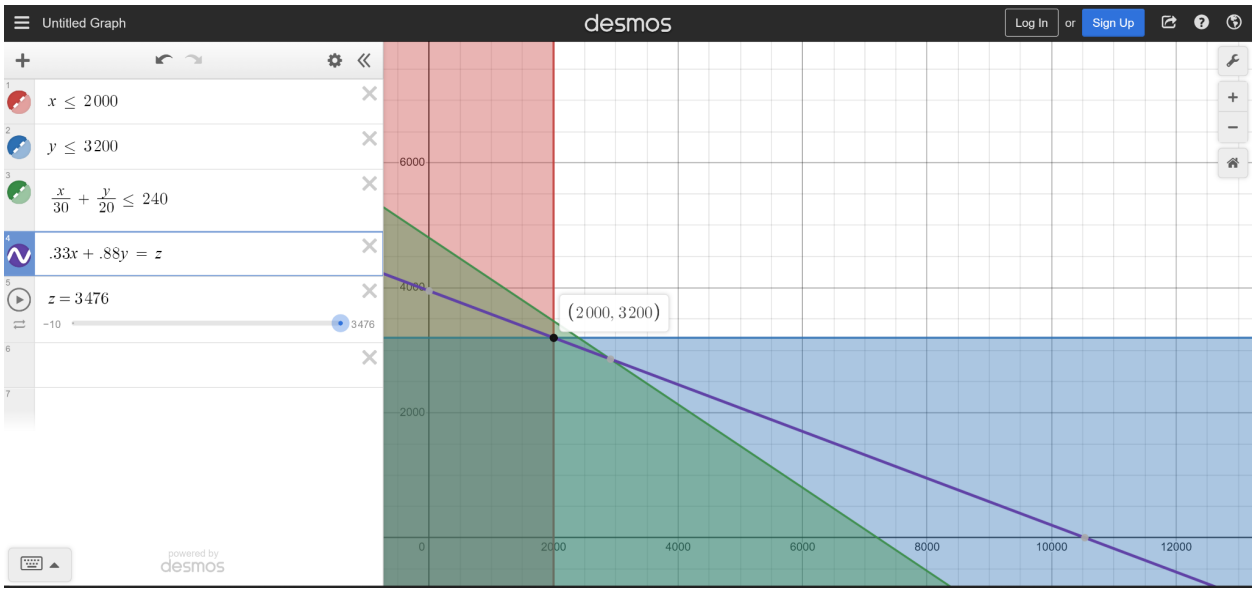
1. $x = number\ of\ hot\ dog\ buns$
   $y = number\ of\ hot\ dogs$
   $z = total\ profit$
   $x \leq 2000$ (max number of buns)
   $y \leq 3200$ (max number of dogs)
   $\frac{1}{30}x + \frac{1}{20}y \leq 200$ (hours)
   $.33x + .88y = z$ (profit function)

2. 1200 Hot Dog Buns
   3200 Hot Dogs
   $3212 Profit



3. $x = number\ of\ hot\ dog\ buns$
   $y = number\ of\ hot\ dogs$
   $z = total\ profit$
   $x \leq 2000$ (max number of buns)
   $y \leq 3200$ (max number of dogs)
   $\frac{1}{30}x + \frac{1}{20}y \leq 240$ (hours)
   $.33x + .88y = z$ (profit function)



2000 Hot Dog Buns
3200 Hot Dogs
$3476

$3476 - $3212 = $264

With the new employee you can make the rest of your possible hot dog buns and generate an additional $264. At a rate of 30 hot dog buns per hour this only takes the new employee 26 hours and 40 minutes. If you can actually sell through all of your product every week and the wages for the 13 hours and 20 minutes left over are less than $264 dollars then it is worth hiring another full-time employee. (Yes, a sixth-full time employee should be considered.)

4. I would recommend at least hiring a sixth employee part-time to max out your production. If like previously stated the 13 hours and 20 minutes left over after producing the rest of the possible hot dog buns costs less than $264 then it may be worth hiring a full-time employee. This extra 13 hours and 20 minutes could possibly be used for other things such as cleaning/maintenance. Given how close your processing plant runs to full capacity it would probably be good to have another full-time employee in case an employee falls ill or takes a vacation or leave of any kind. The numbers above also do not include breaks of any kind so the estimates above for how many buns/dogs can be made with the original 5 full-time workers may be over-estimates. Putting in work time to be 225 hours with 6 full time workers having two 15 minute breaks still does not put you at the full 2000 buns and 3200 dogs. I would recommend hiring the sixth full-timer.

$x = number\ of\ hot\ dog\ buns$
$y = number\ of\ hot\ dogs$
$z = total\ profit$
$x \leq 2000$ (max number of buns)
$y \leq 3200$ (max number of dogs)
$\frac{1}{30}x + \frac{1}{20}y \leq 225$ (hours w/ 2x 15 min breaks excluded)
$.33x + .88y = z$ (profit function)