TIØ4116, Exercise 8.

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Task 1

A In the long run the price will be 18p, because the 3600 factor will be so small that it will not matter.

At the same time we will have an excellent director that earns a minimum of 30% more than the average director. Based on the cost difference. Costs of the two: 25/36 =0.7 vs 1, giving cost difference of 30%.

B The market turnover is described by p*q which gives us (25/36)*1000$\hat{2}$ * 18*1000, given that q and p are measurements of 1000NOK. This gives us a market turnover of 1.25*10$\hat{1}$0 for the excellent directors, while the average will have a turnover of 1.8*10$\hat{1}$0. By expecting that both types of directors have a competitive market price we can assume that the excellent director earns the difference in turnover as profit, resulting in an additional profit of 5.5*10$\hat{9}$.

C If all companies will tend towards hiring the more extraordinary directors the annual wages will move toward a 30% difference.

Task 2

A Given q=1 we have a market quantity of 505. With one production line we have q=Q, giving us p=595. Profit is then p-q=90. This gives a gross margin of 90/505=17.8%

B Given the addition of another production line we get: Cost=520, Price=590, Profit=70, gross margin=13.4%.

C The maximum of profitable production lines are 3. This gives: cost=545, price=585, profit=40, and gross margin=3.7%

See figure 1 for the graph plot of the cost and price functions.

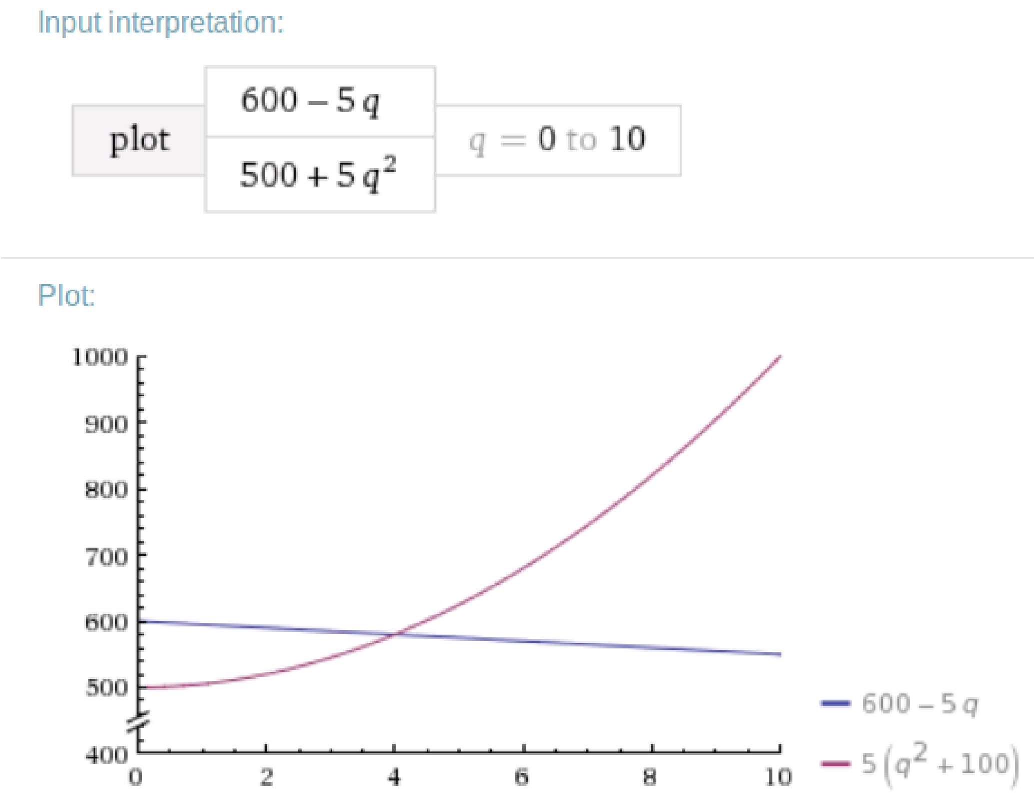

Figure 1:
The graph show the price and cost function. The two graphs intersect at x=4, which is the point where the profit if 0.

D Given the production lines n, we have the return to scale function as 10n+10. This describes the decrease in profit as we increase production with lowered sales prices. We can see this development from previous calculations which gives us profit by production lines: n=1 - profit=90, n=2 - profit=70, n=3 - profit=40, and n=4 - profit=0.

Task 3

A The expression for cost is: 4sqrt(2)r+6r. By looking at the initial function one could indicate that the function is linear. The marginal cost is: 11.66. The average cost is: (total cost / quantity), as the quantity is not given in this case we cannot calculate the average cost.

Input interpretation:

plot	$(3+\sqrt{L})^2$ $(4+\sqrt{L})^2$	$L = 0$ to 200

Plot:

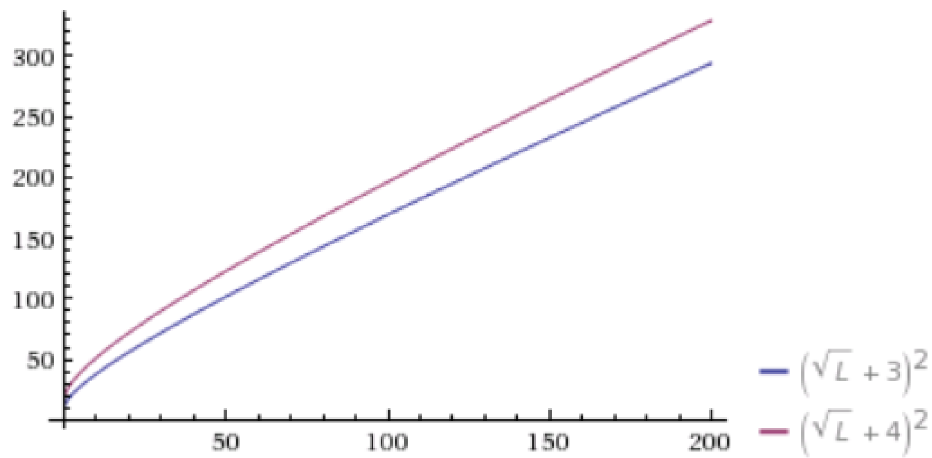

Figure 2:
The graphs shows the cost function of the two factories. The two functions are near linear and becomes more linear as the values increases.

B The two factories have equal profit margin per quantity, but one factory has bigger production capacity than the other, which increases the production cost.

C The factories would divide the work load with 64% of the load to the bigger factory and 36% to the smaller. The marginal value can be found by letting the quantity be 1. Then we get the marginal value to be 41.

task 4