3

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91400

914000

NZQA

NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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# Level 3 Economics, 2015

## 91400 Demonstrate understanding of the efficiency of different market structures using marginal analysis

2.00 p.m. Wednesday 18 November 2015
Credits: Four

| Achievement | Achievement with Merit | Achievement with Excellence |
|---|---|---|
| Demonstrate understanding of the efficiency of different market structures using marginal analysis. | Demonstrate in-depth understanding of the efficiency of different market structures using marginal analysis. | Demonstrate comprehensive understanding of the efficiency of different market structures using marginal analysis. |

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**You should attempt ALL the questions in this booklet.**

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Low Achievement

TOTAL 8

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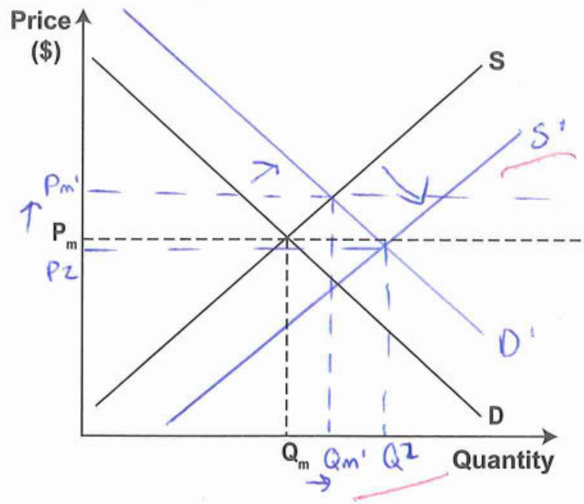
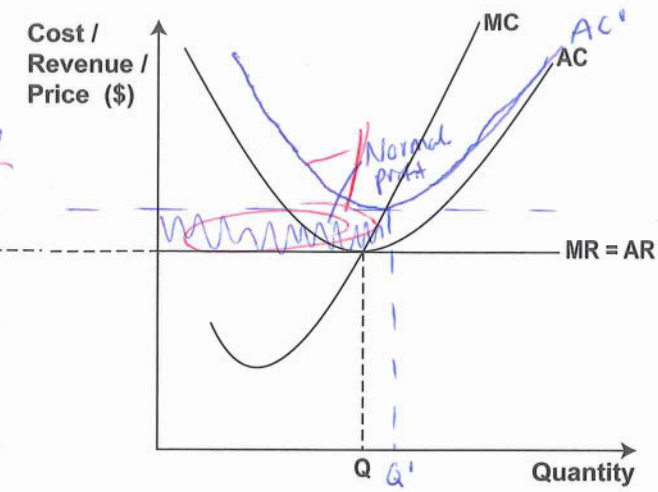
## QUESTION ONE: PERFECT COMPETITION

**Graph One: The market**




**Graph Two: The individual perfectly competitive firm**




(a) (i) Complete Graph One to show the impact of an increase in market demand on the market equilibrium price and quantity. Label the new price $\mathbf{P}_{m1}$ and the new quantity $\mathbf{Q}_{m1}$.

(ii) Complete Graph Two to show the impact of an increase in market demand on the short-run profit maximising level of output for the individual firm. Label the new level of output as $\mathbf{Q}_1$.

(iii) On Graph Two, clearly shade and label the new level of economic profit that will be earned by the individual firm at $\mathbf{Q}_1$. Identify the economic profit as normal, subnormal, or supernormal.

(b) Use **marginal analysis** to compare and contrast the short-run and long-run profit and output decisions of a perfect competitor after an increase in market demand.
In your answer:

- explain in detail the changes to the short-run level of output and profit for the individual firm as a result of the increase in market demand
- make changes to Graph One to show how the market equilibrium price and quantity will be affected in the long run
- explain how the long-run changes in the market will affect the long-run levels of output and profit for the individual firm
- refer to Graph One and Graph Two.

A perfect competition market is one which has many firms, no barriers to entry and is a price taker. During the short run period a firm is not able to exit or enter the market even if the profit seems to be appealing to new firms. In the long term entry & exit is free to do. Over time//

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more firms will enter the market this will cause the supply of the identical good to increase from S - S'. Quantity supplied will increase from Qm' - Q2. This will also cause the price to drop from Pm' - P2 for the general market. The individual firm will however now have to fight for their market share & demand for their product will be lower. Price level will fall and the individual firm will begin to make sub-normal profits as AC becomes greater than AR. This could eventually lead to shutdown and the firm exiting the market.

M2

## QUESTION TWO: NATURAL MONOPOLY

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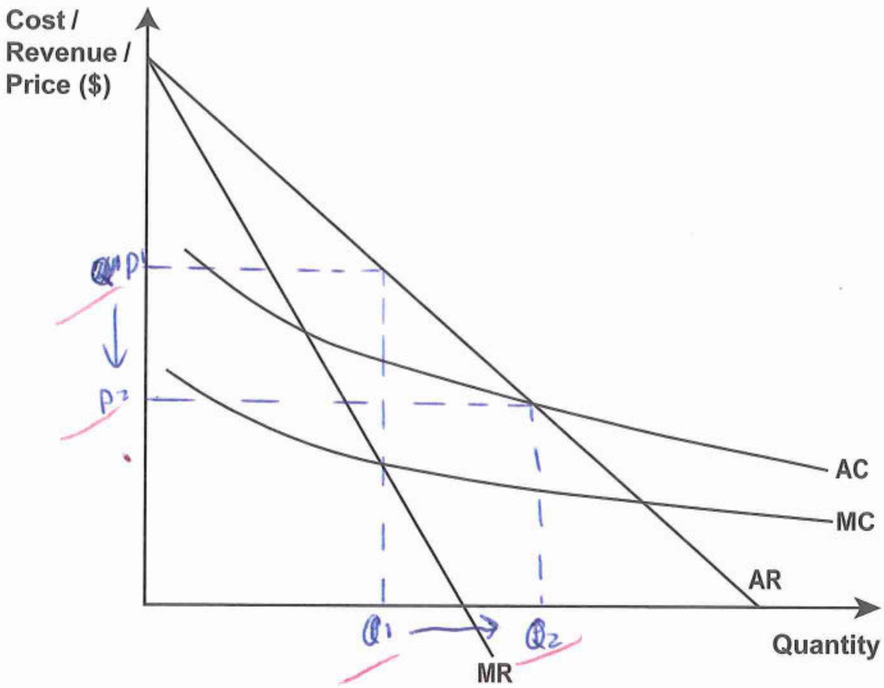
KiwiRail is a state-owned enterprise that was nationalised (bought back by the Government) in 2008. It can be considered an example of a natural monopoly in the New Zealand market for rail transport.

**Graph Three: The New Zealand market for rail transport**




(a) On Graph Three, label the profit maximising price ($\mathbf{P_1}$) and quantity ($\mathbf{Q_1}$).

One of the main benefits of KiwiRail being nationalised is that the Government can regulate a price that will encourage greater use of rail transport. Average cost pricing would be one method of achieving this objective.

(b) Compare and contrast the impact on consumers, KiwiRail, and allocative efficiency of regulating average cost pricing. Assume KiwiRail is initially at the profit maximising equilibrium of $\mathbf{P_1}$ and $\mathbf{Q_1}$.
In your answer:

- on Graph Three, identify the price ($\mathbf{P_2}$) and quantity ($\mathbf{Q_2}$) of rail services that would be provided if regulated average cost pricing was used by KiwiRail ✓
- explain in detail the impact of regulated average cost pricing on consumers of rail transport and consumer surplus ✓
- explain in detail the impact of regulated average cost pricing on KiwiRail's economic profit ✓
- explain in detail why regulated average cost pricing would result in a more allocatively efficient outcome compared to the profit maximising equilibrium
- refer to Graph Three.

A regulated cost pricing on consumers causes the price to fall from P1 - P2. This makes train

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rides more affordable for consumers and also causes the quantity demanded to increase from Q' - Q². This causes consumer surplys to increase as they recieve more of a benefit from the train ride as the price is now lower. Demand for rail transport will now increase greatly. Kiwi Rails economic profit may fall now because pricing is now being operated at AC = AR. This causes the revenue to drop from P' - P² and profit decreases.

Average cost pricing is more allocatively efficient because at that cost demand increases and the need for employees increases to handle the increase in demand for train rides. This will lead to our human resources being used to their full potential and allocative efficienty being at a higher point than it would have been at the profit maximising point

A3

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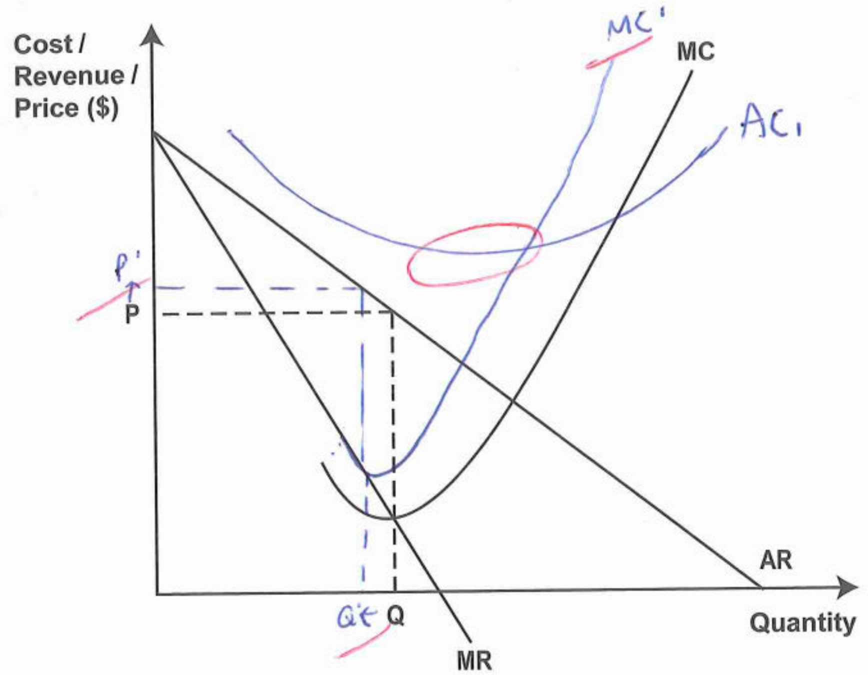
## QUESTION THREE: MONOPOLY

On 1 April 2014, the New Zealand minimum wage was increased to $14.25. This would have resulted in a significant increase in labour costs for firms that were paying workers the previous figure of $13.75.

**Graph Four: A monopoly market**




(a) Complete Graph Four to show the impact of increased labour costs for a monopoly. Clearly label any changes.

(b) Explain in detail, using **marginal analysis**, the change in the profit maximising price and quantity as a result of increased labour costs.

Because of the increase in labour costs, marginal costs also increased from MC - MC'. This caused the quantity demanded to decrease from Q - Q' and in turn in order to keep the profit ~~prices above at~~ maximised the price increased from P - P'. This meant that at a lower quantity the price increased to keep profit levels constant.

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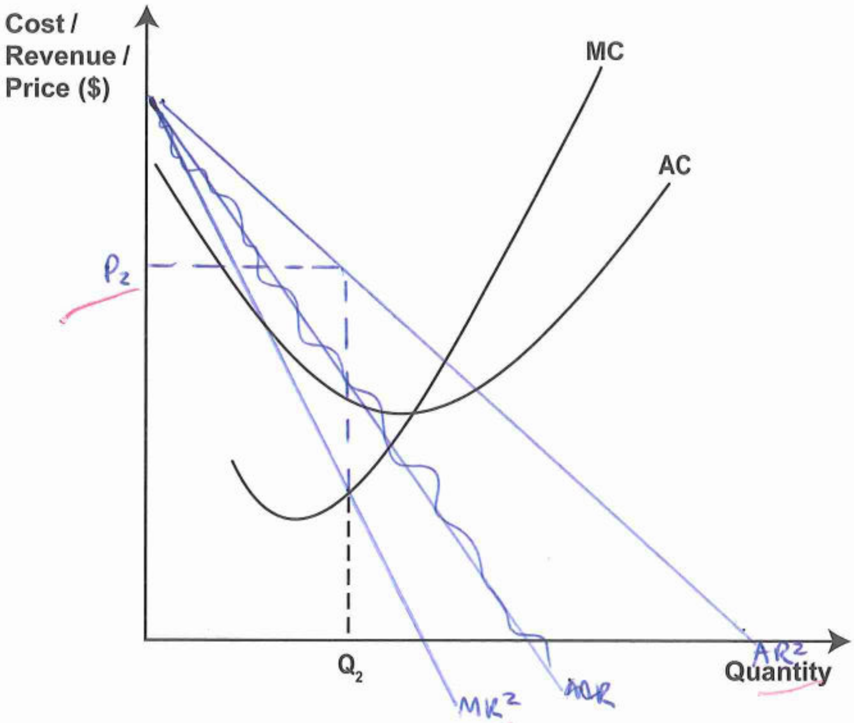
(c) Compare and contrast the long-run price and output decisions of a monopolist earning a subnormal profit with a monopolist earning a supernormal profit.

In your answer:

- on **Graph Four** on the previous page, draw and label the average cost curve for the monopolist if the increase in labour costs results in a **subnormal** profit being earned. Label the curve $\mathbf{AC_1}$.
- explain in detail what the monopolist will do in the long run if **subnormal** profits continue to be earned and there are no other changes in costs or revenue
- on **Graph Five** below, draw and label the revenue curves for a profit maximising monopolist earning a **supernormal** profit at $\mathbf{Q_2}$. Label the curves $\mathbf{MR_2}$ and $\mathbf{AR_2}$, and the price $\mathbf{P_2}$
- explain in detail why the monopolist producing at $\mathbf{Q_2}$ can continue to earn **supernormal** profits in the long run
- explain in detail why the price and output decisions of the monopolist will remain unchanged in the long run if **supernormal** profits continue to be earned.

**Graph Five: A monopoly market**




If subnormal profits continue to be earned in the long-run the business/firm may go into shut down. A monopoly is a single firm in a market, that has control over either the price or quantity and there are very strong barries to entry

A monopolist earning ~~at~~ and producing at Q2 can continue to earn supernormal profits because it is the only firm in the market and it

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therefore controls the price or the quantity sold.

The price and output decisions of the monopolist firm will continue to be unchanged while the firm is making a supernormal profit because no other firm can or will produce the good & the firm has sole control over the market at any point and also because at point Qz the consumers are demanding Qz quantity of goods. The profit is maximised at the equilibrium. Also because the monopolist wants to make as much money as possible they will continue to produce at this point.

A3

<table>
<tr><th colspan="3">Low Achievement exemplar for 91400 2015</th><th>Total score</th><th>08</th></tr>
<tr><th>Q</th><th>Grade score</th><th colspan="3">Annotation</th></tr>
<tr><td>1</td><td>N2</td><td colspan="3">Part (a)<br>• Supernormal profit incorrectly labelled normal profit<br>• Supernormal profit incorrectly shaded with no ‘white space’ visible between shading and MR=AR line<br>• New MR’=AR’ line not labelled<br>• Correct plotting of increased demand<br>Part (b)<br>• Correct identification of new market quantities in the short and long term after increased demand<br>• No reference to or use of marginal analysis in part (b) negating this section.</td></tr>
<tr><td>2</td><td>A3</td><td colspan="3">Part (a)<br>• Correct graphing of profit maximising price and quantity<br>Part (b)<br>• Correct graphing of average cost pricing price and quantity<br>• Identified average cost pricing would benefit consumers by increasing quantity of train rides available and tickets being ‘more affordable’ implying reduction of prices.<br>• Correctly identifies KiwiRail’s profit will decrease, however, does not give any detail required using decline from supernormal profit at PM pricing to normal profit at AC pricing or no longer achieving profit maximisation at MC=MR.</td></tr>
<tr><td>3</td><td>A3</td><td colspan="3">Part (a)<br>• Correctly shows an increase in MC by moving it to the left and labelling correctly<br>• Correct identification of new price and quantity<br>Part (b)<br>• Refers to but does not use marginal analysis<br>Part (c)<br>• Incorrectly draws the AC curve so that it does not turn on the MC curve<br>• Correctly recognised the monopoly will have to shut down in the long term, however, does not recognise the difference between shutting down and leaving the industry. Does not identify shut down occurs at AC>AR or TC>TR, preventing this from moving to a merit response.<br>• Correctly identifies the monopoly has strong barriers to entry but does not identify any such barriers, preventing this from moving to a merit response.<br>• Recognises the monopoly operates at profit maximisation but does not use this to explain that is why price and quantity will remain unchanged. The candidate also refers to PM as occurring at equilibrium.</td></tr>
</table>

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High Achievement

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## QUESTION ONE: PERFECT COMPETITION

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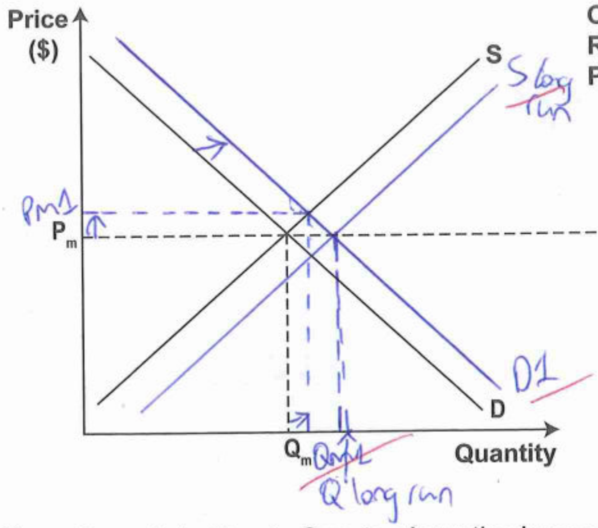


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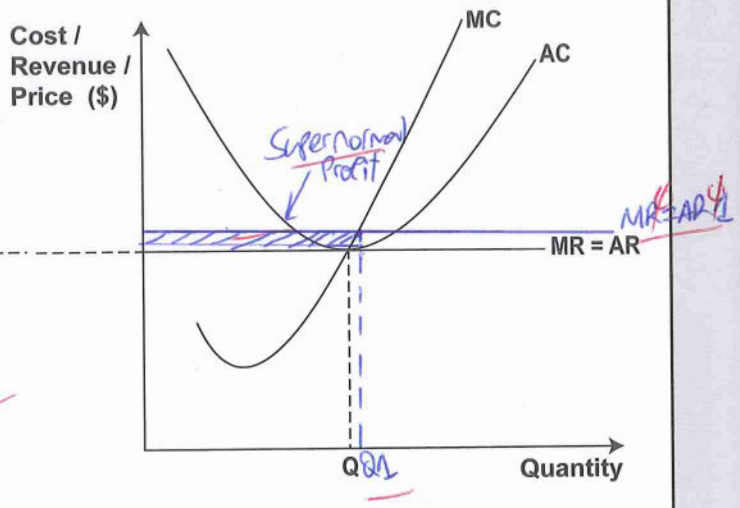


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(b) Use **marginal analysis** to compare and contrast the short-run and long-run profit and output decisions of a perfect competitor after an increase in market demand.
In your answer:

- explain in detail the changes to the short-run level of output and profit for the individual firm as a result of the increase in market demand
- make changes to Graph One to show how the market equilibrium price and quantity will be affected in the long run
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- refer to Graph One and Graph Two.

In a market of perfect competition, there is no barriers to entry or exit, each firm sells ~~to~~ identical goods to another, and the firms are too small to influence the market price so their demand curve is the same as their ~~MR~~ MR and AR curve. In the short-run, as demand increases in the market, it also

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increases for the individual firm. This means, at the original quantity, MR is greater than MC. This means the firm is not making the most profit that it's capable of making so they will increase the quantity supplied until MR = MC which is their profit maximising ~~pro~~ output. At this point, the firm is making the most profits which is a supernormal profit as shown on graph Two. The market is also at equilibrium at this point because MC (S) = MR (D). In the long run, ~~the~~ Since perfect competition market is free to ~~entry~~ enter or exit, there will be more and more firms entering this market due to the supernormal profit that they are making. Since more firms will enter the market, supply of the good or service will increase since there are more firms, this would result in the increase in supply in the market ~~but~~ which would pull the price back down but ~~&~~ output will be increased. This will occur for the individual firm as ~~to~~ well because MC = S. So MC increases, ~~causing~~ causing quantity to increase but pulls the price down ~~&~~ as the firms will ~~&~~ start making normal profit at MC = AC = MR.

A4

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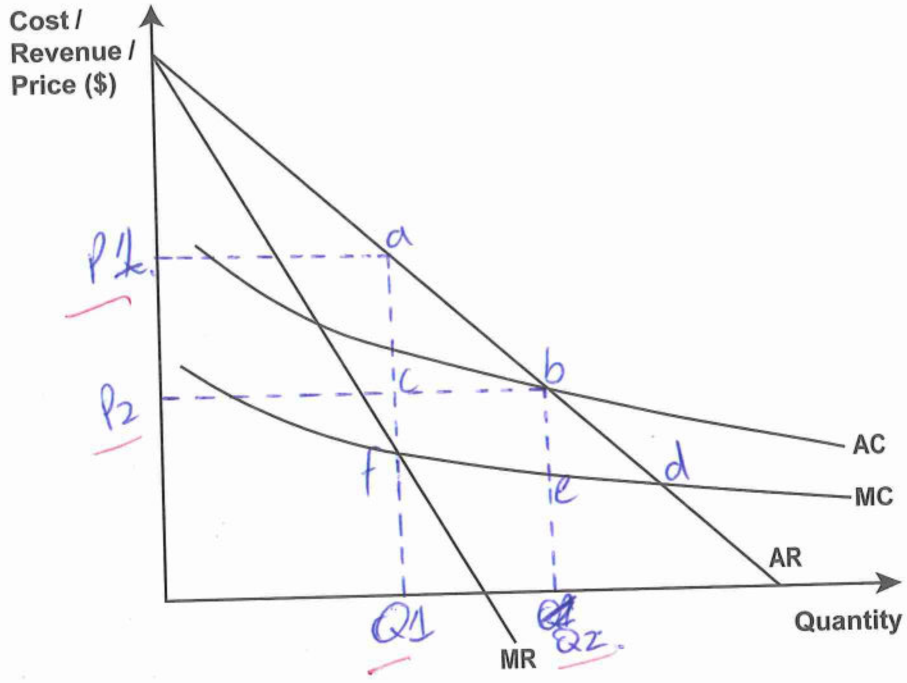
## QUESTION TWO: NATURAL MONOPOLY

KiwiRail is a state-owned enterprise that was nationalised (bought back by the Government) in 2008. It can be considered an example of a natural monopoly in the New Zealand market for rail transport.

**Graph Three: The New Zealand market for rail transport**




(a) On Graph Three, label the profit maximising price ($P_1$) and quantity ($Q_1$).

One of the main benefits of KiwiRail being nationalised is that the Government can regulate a price that will encourage greater use of rail transport. Average cost pricing would be one method of achieving this objective.

(b) Compare and contrast the impact on consumers, KiwiRail, and allocative efficiency of regulating average cost pricing. Assume KiwiRail is initially at the profit maximising equilibrium of $P_1$ and $Q_1$.
In your answer:

- on Graph Three, identify the price ($P_2$) and quantity ($Q_2$) of rail services that would be provided if regulated average cost pricing was used by KiwiRail
- explain in detail the impact of regulated average cost pricing on consumers of rail transport and consumer surplus
- explain in detail the impact of regulated average cost pricing on KiwiRail's economic profit
- explain in detail why regulated average cost pricing would result in a more allocatively efficient outcome compared to the profit maximising equilibrium
- refer to Graph Three.

Average cost Pricing is a Policy that the government uses to regulate the price of a monopoly / Natural monopoly

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Average cost pricing occurs when AR = AC. The impact of the ~~averge~~ average cost pricing ~~on~~ has a positive effect on consumers because now the price is cheaper for them to use any rail transport. As ~~cons~~ it is cheaper for the consumers, ~~con~~ consumer surplus will increase by P1, a, b, P2

The impact of average cost pricing on the economic ~~f~~ ~~benefit~~ profit of Kiwirail ~~will~~ may decrease slightly. This is because ~~a~~ the price that ~~the~~ Kiwirail charges its consumers decreases from P1 to P2. This results in less profit for them but the quantity ~~supplied~~ increases from Q1 to Q2. The area of the increase in quantity is slightly smaller than the area ~~of~~ of price decreasing so profit may ~~decr~~ decrease slightly.

The regulated average cost pricing would be more allocatively ~~effe~~ efficient because it is now cheaper for consumers ~~a~~ and the usage increases. The dead weight loss at the profit maximising output is a, d, f but at the new price and quantity, the dead weight loss is only b, d, e. This is smaller and it's because ~~a~~ the price and quantity is closer to equilibrium of MC (S) ~~MR~~ = AR (D)

A4

## QUESTION THREE: MONOPOLY

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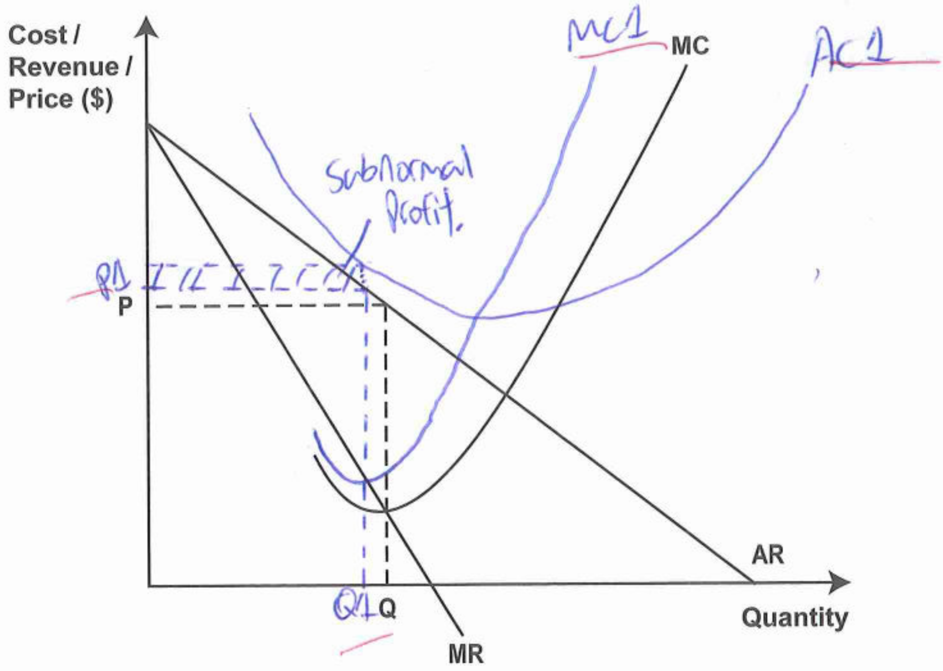
On 1 April 2014, the New Zealand minimum wage was increased to $14.25. This would have resulted in a significant increase in labour costs for firms that were paying workers the previous figure of $13.75.

**Graph Four: A monopoly market**




(a) Complete Graph Four to show the impact of increased labour costs for a monopoly. Clearly label any changes.

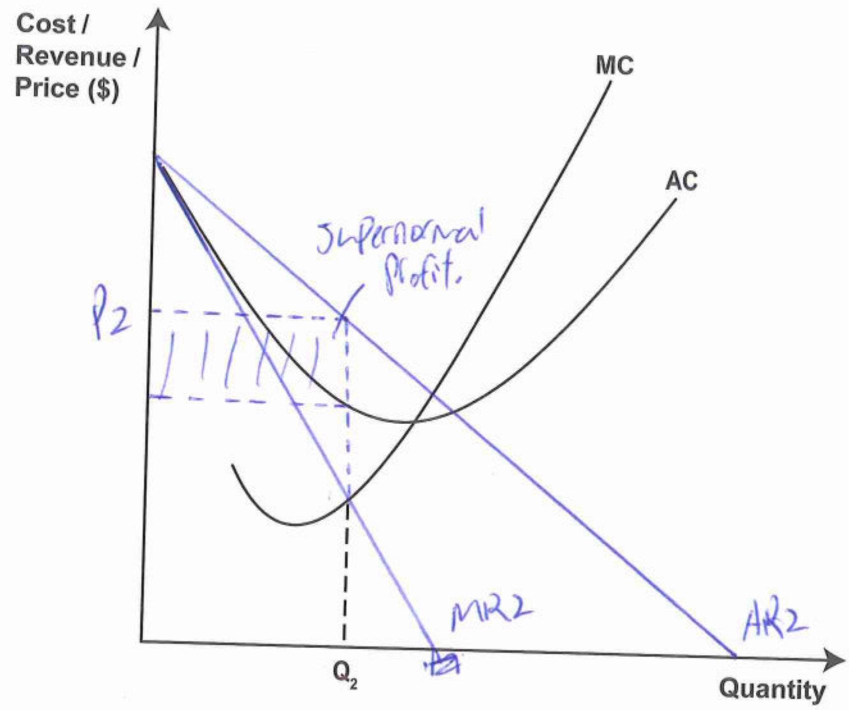
(b) Explain in detail, using **marginal analysis**, the change in the profit maximising price and quantity as a result of increased labour costs.

The increase in labour costs would increase Marginal cost (MC) from MC to MC 1. This is because as minimum wage increases so will the cost to produce one more unit. As a result, the monopoly will decrease its profit maximising quantity ~~and~~ from ~~it~~ Q to Q1 and ~~a~~ increase the profit maximising price because they'll now need to increase the price to cover the extra cost brought in by the new minimum wage policy. ~~As AC decreases~~, This would result in MR = MC1. Which is their profit maximising point.

(c) Compare and contrast the long-run price and output decisions of a monopolist earning a subnormal profit with a monopolist earning a supernormal profit.
In your answer:

- on **Graph Four** on the previous page, draw and label the average cost curve for the monopolist if the increase in labour costs results in a **subnormal** profit being earned. Label the curve **AC$_1$**.
- explain in detail what the monopolist will do in the long run if **subnormal** profits continue to be earned and there are no other changes in costs or revenue
- on **Graph Five** below, draw and label the revenue curves for a profit maximising monopolist earning a **supernormal** profit at **Q$_2$**. Label the curves **MR$_2$** and **AR$_2$**, and the price **P$_2$**
- explain in detail why the monopolist producing at **Q$_2$** can continue to earn **supernormal** profits in the long run
- explain in detail why the price and output decisions of the monopolist will remain unchanged in the long run if **supernormal** profits continue to be earned.

**Graph Five: A monopoly market**




Due to the strong barriers to ~~entry~~ enter the ~~...~~ monopoly market, there is (virtually) no competitors in the market. This means the monopoly firm can be a price ~~...~~ maker, they can determine to change either price or quantity but not both. For a monopoly earning a a subnormal profit ~~...~~ in the long run, they will likely to shut down and enter ~~...~~ other ~~...~~ markets because that way, they may earn more profit than the sub-normal profit. Since the monopoly can

over page

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determine their price or quantity, they would choose the profit ~~maximising~~ maximising point. If they continue to make a sub-normal profit at their profit maximising point, there is ~~very~~ ~~lit~~ no point for them to stay in the industry. The monopolist can continue to earn supernormal profits in the long run because ~~they~~ s they can choose ~~p~~ what price they want to operate at due to no or very few competitors with the strong barrier to entry, they ~~a~~ are not scared ~~to~~ for other firms to enter and share the supernormal profit. ~~They will~~ The output and decision will remain unchanged because there is no one else that they must compete for to decrease their price. Unless if the government decides to regulate their price otherwise they will continue to operate at their profit maximising output.

<table>
<tr><td colspan="3">High Achievement exemplar for 91400 2015</td><td>Total score</td><td>12</td></tr>
<tr><td>Q</td><td>Grade score</td><td colspan="3">Annotation</td></tr>
<tr><td>1</td><td>A4</td><td colspan="3">Part (a)<br>• Correct plotting of short- and long-term impact of increased demand<br>• Correct identification of new market quantities in the short and long term after increased demand<br>• Supernormal profit correctly labelled<br>• Supernormal profit correctly shaded with ‘white space’ visible between shading and MR=AR<br>• New MR=AR line inadequately labelled<br><br>Part (b)<br>• Correctly identifies the change in short-run profit to a supernormal profit and uses marginal analysis to explain the increase in output from Q to $Q_1$<br>• Correctly identifies the change in long-run profit from supernormal to a normal profit but does not use marginal analysis to explain the decrease in output from $Q_1$ to Q.<br>• Refers to both graphs</td></tr>
<tr><td>2</td><td>A4</td><td colspan="3">Part (a)<br>• Correct graphing of profit-maximising price and quantity<br>• Correct graphing of average cost pricing price and quantity<br>Part (b)<br>• Identified average cost pricing would benefit consumers by increasing quantity of train rides available and tickets being ‘cheaper’ implying reduction of prices.<br>• Refers to increase in consumer surplus but does not explain the increase in quantity nor how the change in price leads to an increase in consumer surplus needed as evidence for a Merit grade<br>• Does not recognise the change in profit from profit-maximisation or supernormal profit, to a normal profit.<br>• Correctly identifies the smaller DWL as evidence for the monopoly now being more allocatively efficient but does not recognise a larger net surplus as needed as evidence for a Merit grade.</td></tr>
</table>

| | | |
|---|---|---|
| 3 | A4 | Part (a)<br>• Correctly moves the MC to the left and draws the resulting reduced quantity and increased price<br>Part (b)<br>• Did not use marginal analysis to explain the need to reduce quantity to avoid marginal losses as needed for Merit evidence,<br>Part (c)<br>• Correctly draws the AC curve above AR and turning on the MC curve<br>• Correctly recognises the monopoly will have to shut down in the long term, does not identify shut down occurs at AC>AR or TC>TR, preventing this from moving to a Merit response.<br>• Correctly identifies the monopoly has strong barriers to entry but does not identify any such barriers, preventing this from moving to a Merit response.<br>• Recognises the monopoly operates at profit maximisation but does not use this to explain that is why price and quantity will remain unchanged. |