Applied Mathematics

ASSIGNMENT

Unit 2

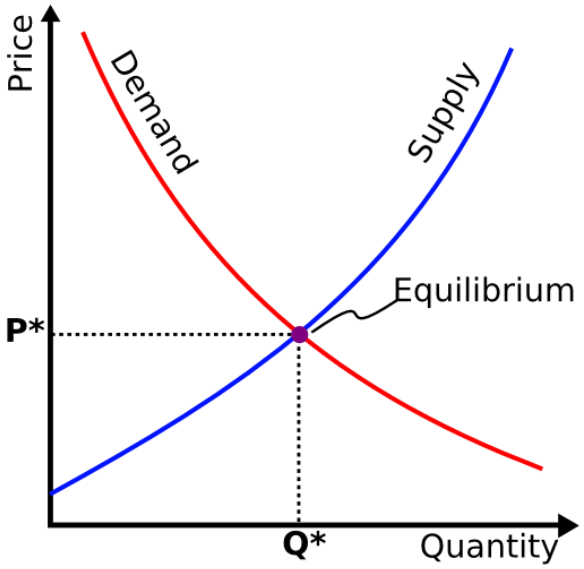
name of student.....

name of teacher .....

Date	ASGMT	Questions for Completion	Areas for Improvement
	1 App		
	2 App		
	3 App		
	Ext W		
Evaluation:			
	4 App		
	Ext W		
	5 App		
	6 App		
Evaluation:			

	%
ASGMT **1** App	
ASGMT **2** App	
ASGMT **3** App	
Extension Work	
Test 1 App	
ASGMT **4** App	
Extension Work	
ASGMT **5** App	
ASGMT **6** App	
Test 2 App	
SF Test App	

Economic Functions



Assignment **1** App

Calculator allowed

You must show all working

You must label all the points and graphs

Total marks for the paper - **100**

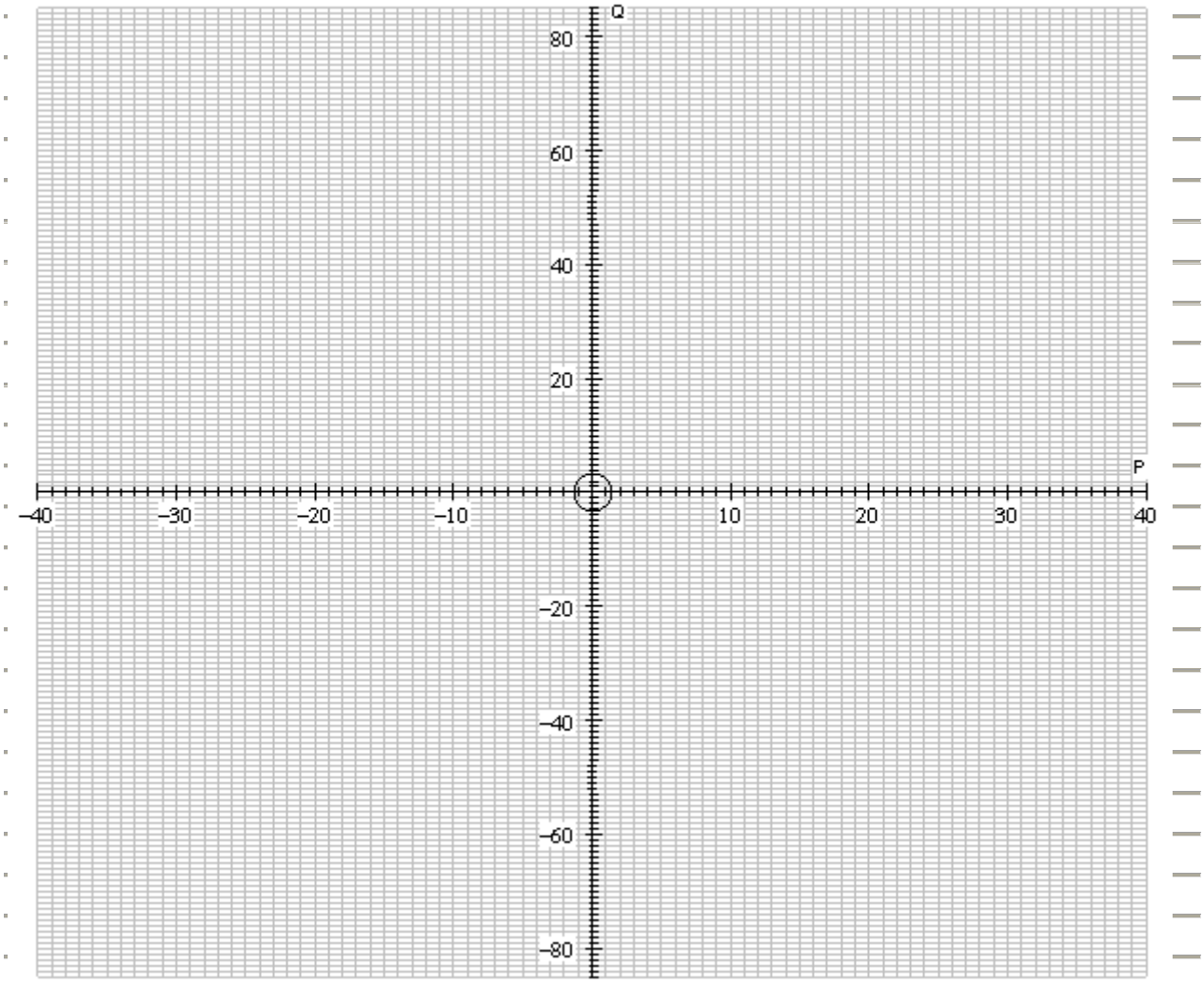
Q1

Given the following *demand* function calculate P when $Q = 15$:

$Q = 25 - 5P$ **(2)**

$Q = 80 - 2.5P$ **(2)**

Using the grid (below) plot the graphs of the *demand* functions. **(8)**



(Total **12** marks)

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Q1

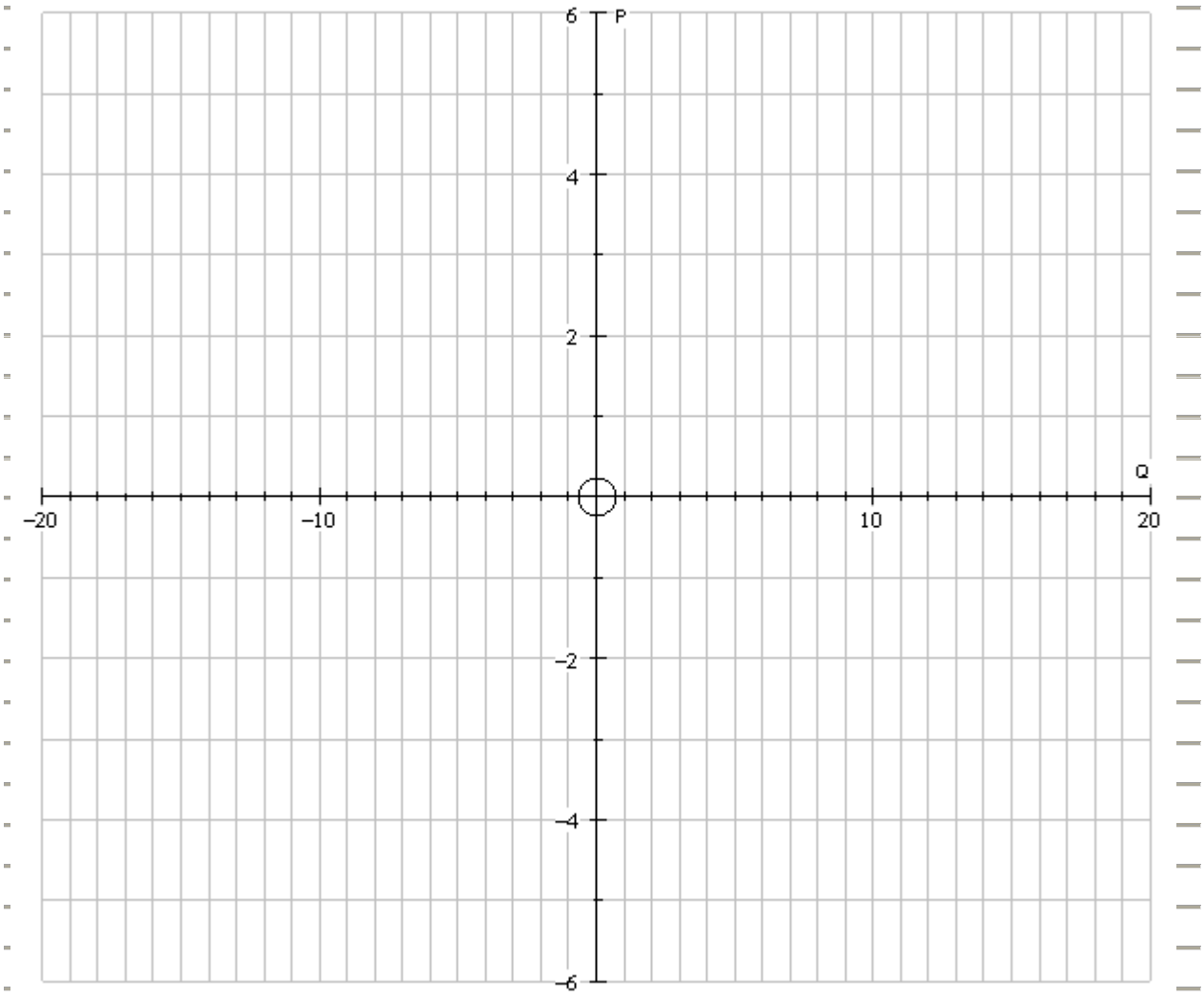
Q2

A *supply* function is given by the equation $20P = 80 + 5Q$

a) What is the *slope* and *intercept* of the function? (**3**)

b) Calculate the *zero* of the function. (**3**)

c) Using the grid below plot the graph of the *supply* function. (**4**)



(Total **10** marks)

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Q2

Q3

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Given the *demand* function of a monopolist as $Q = 50 - 0.5P$

a) Write down the equation for the *demand* function in the form $P = f(Q)$. **(1)**

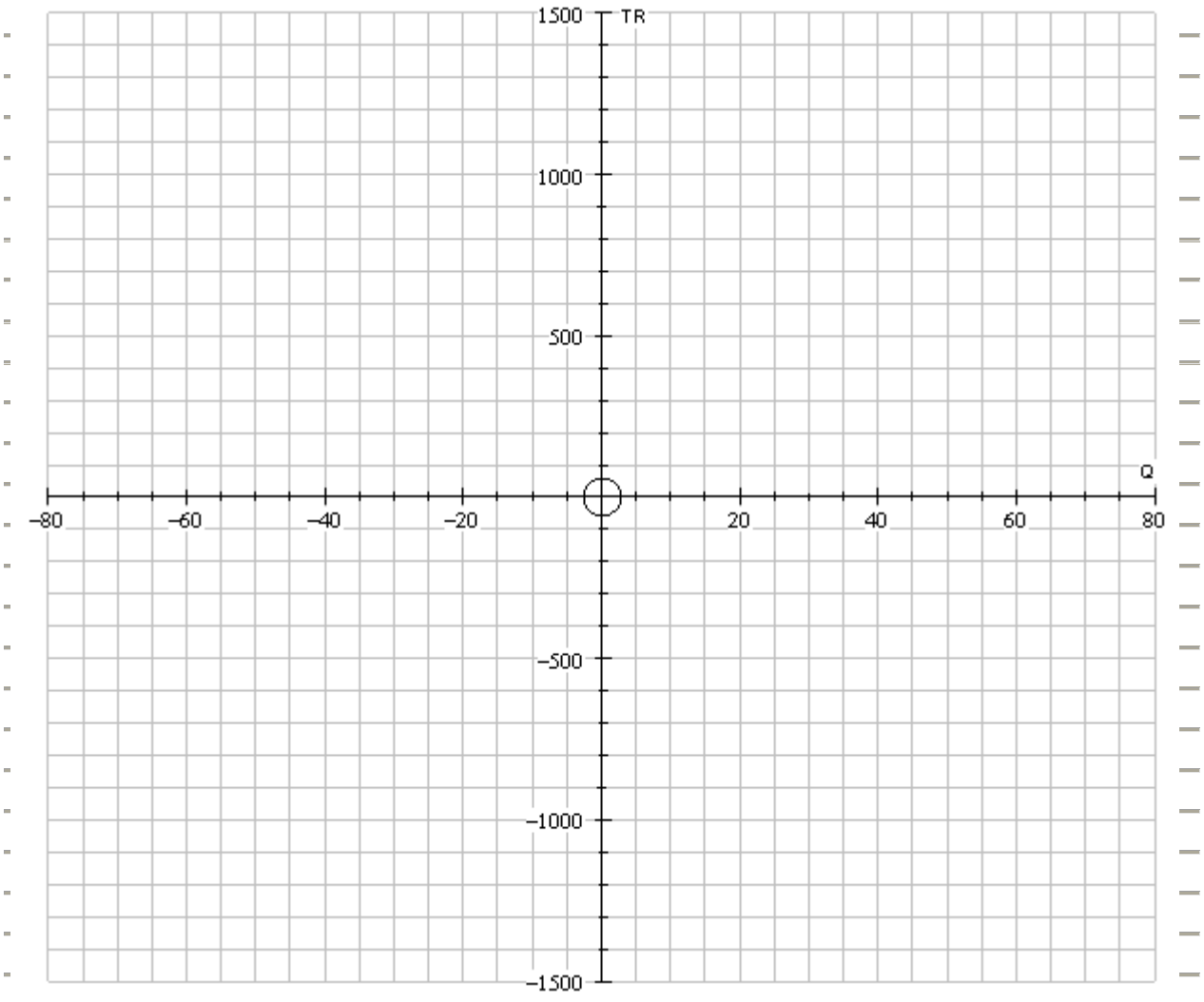
b) Write down the equation for TR in the form $TR = f(Q)$ **(2)**

c) Calculate TR when $Q = 10$. **(2)**

d) Calculate the *zeroes* of the TR function. **(2)**

e) Calculate *maximum* revenue. **(2)**

f) Using the grid below, draw the graph of the TR function. **(5)**



(Total **14** marks)

Q3

Q4

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The *demand* and *supply* functions for a good (jeans) are given by:

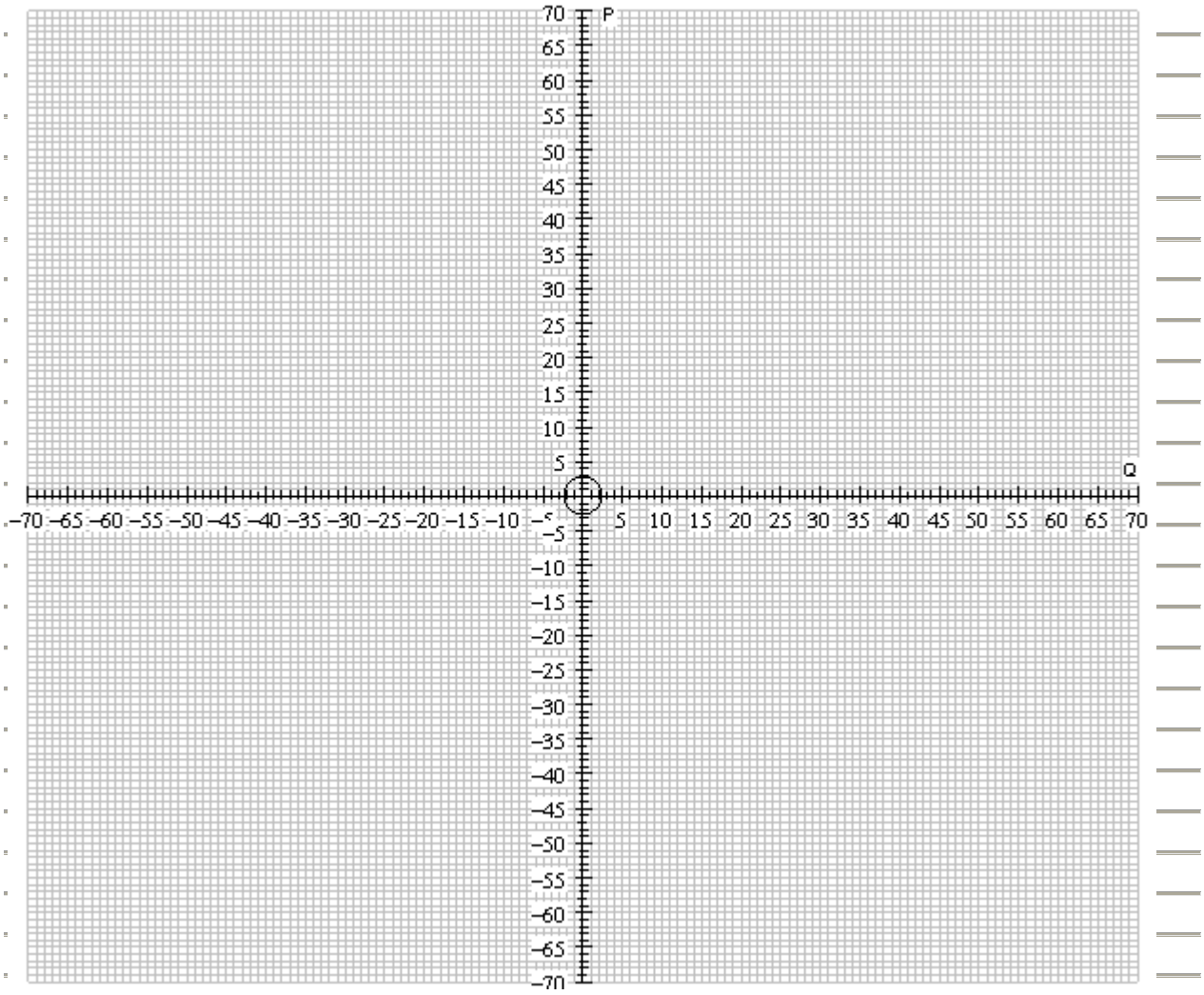
demand function $P_d = 50 - 3Q_d$

supply function $P_s = 14 + 1.5Q_s$,

where P is the price of a pair of jeans; Q is the number of pairs of jeans.

Calculate the *equilibrium* price and quantity. (**5**)

Confirm your answer graphically. (**10**)



Q4

(Total **15** marks)

Q5

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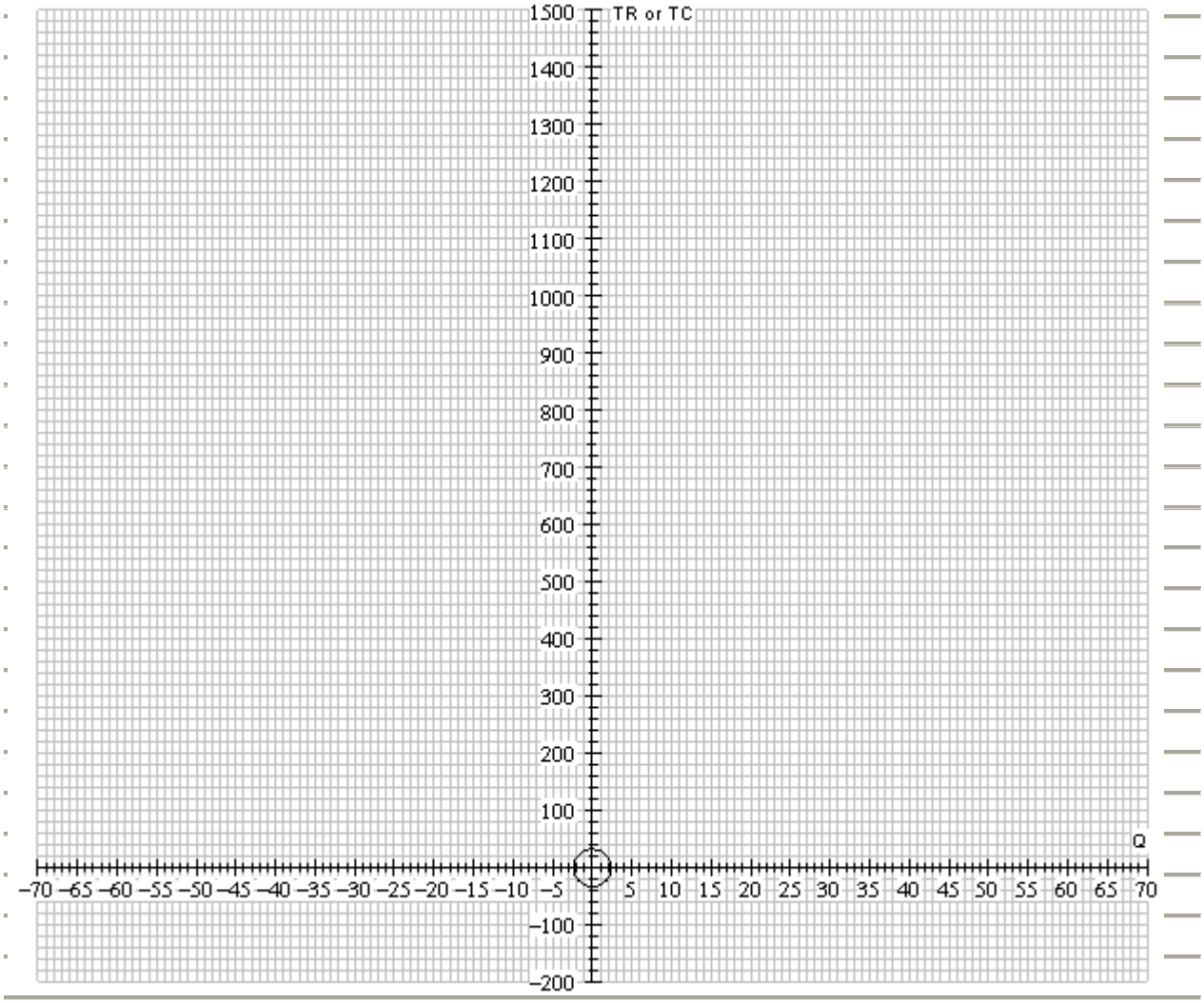
A firm's total cost function is given by the equation TC = 200 + 3Q, while the demand function is given by the equation P = 107 – 2Q

a) Write down the equation of the *total revenue* function. (**3**)

b) Graph the *total revenue* function and find *maximum* total revenue. (**7**)



c) Plot the *total cost* function on the same diagram as in b). (**3**)

Leave blank

d) Calculate *break-even* points algebraically. Confirm your answer graphically. (**5**)

e) State the range of values of Q for which the company makes a profit. (**2**)

(Total **20** marks)

Q5

Q6

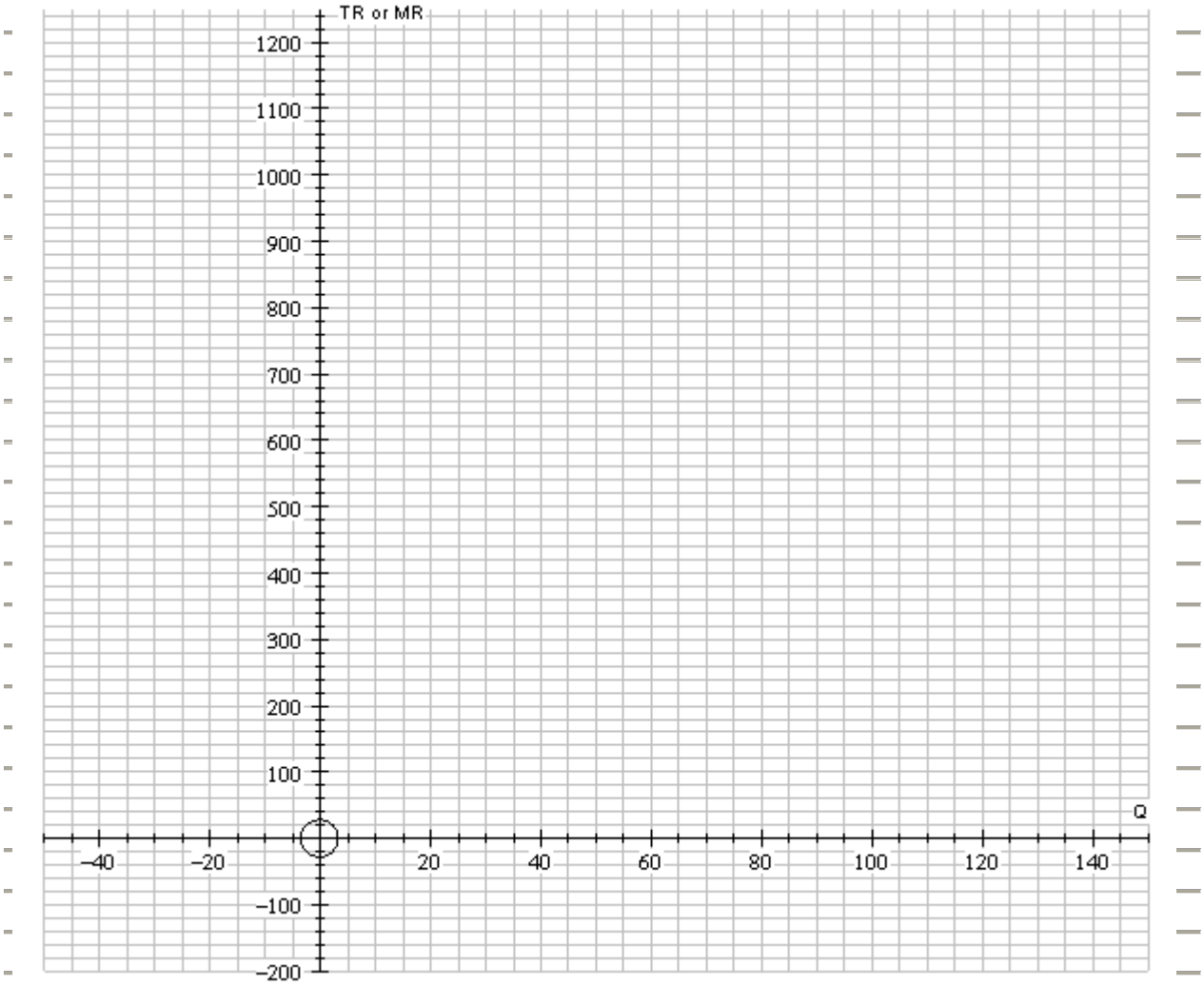
The demand function for a monopolist is given by the equation $Q = 120 - 3P$.

a) Find equations for TR (total revenue) and MR (*marginal revenue*) functions in the form $TR = f(Q)$ and $MR = f(Q)$. (**3**)

Leave blank

b) Calculate *maximum TR* using the value of Q when $MR = 0$. (**3**)

c) Using the grid below sketch the graphs of TR and MR functions. (**6**)



Q6

(Total **12** marks)

Q7

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Given the *demand function* $Q = 150 - 0.5P$ and *total cost* function $TC = 564 + 14Q$.

a) Write down the equations for TR and the *profit* functions **(3)**

b) Calculate the *break-even* points algebraically. **(2)**

c) Use *differentiation* to calculate the number of units which must be produced to *maximise* TR and the *profit*. **(3)**

d) Using the grid below sketch the graphs of *TR* and *TC* functions. Show *maximum TR* and *break-even* points on the graph. (**6**)

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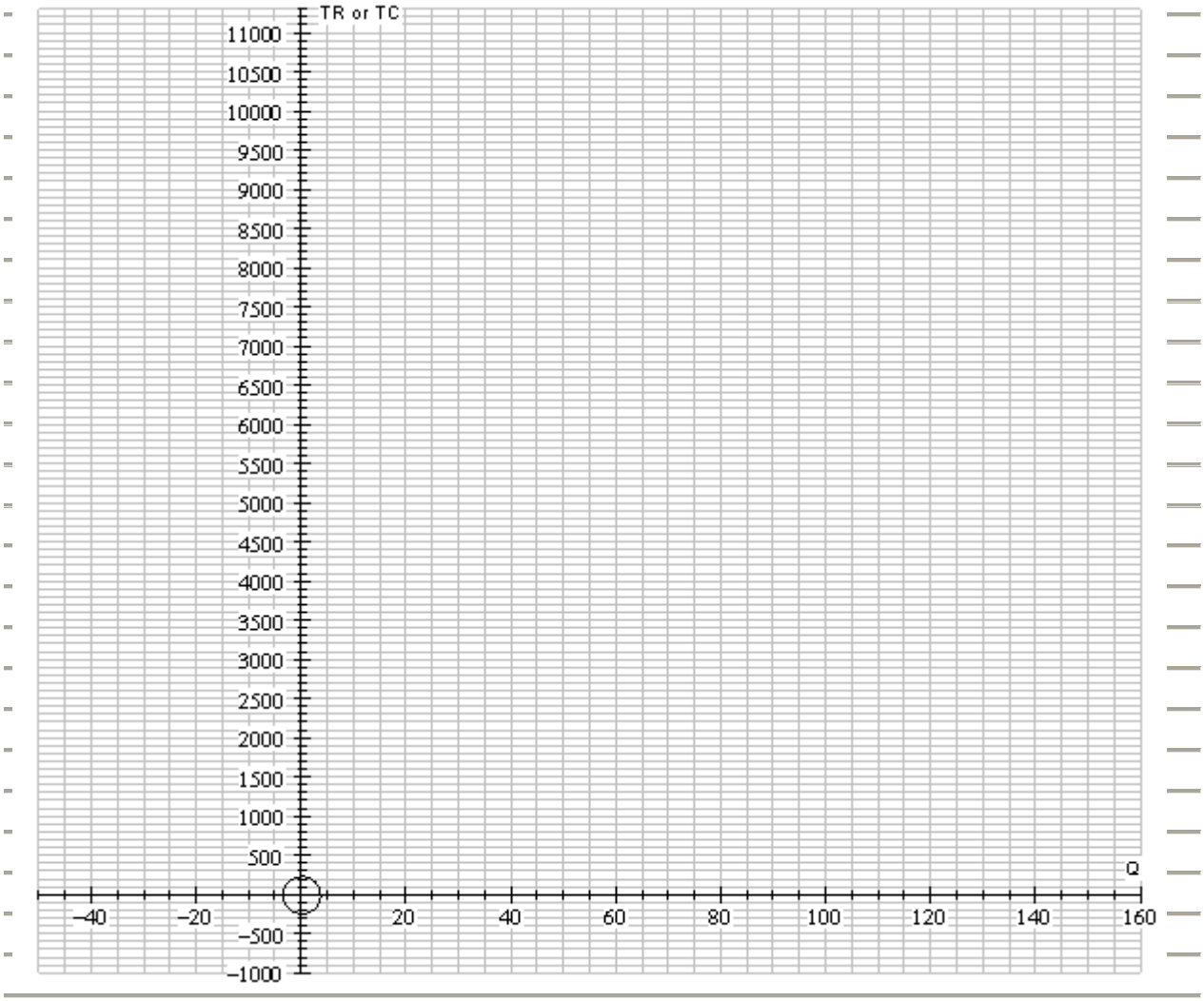

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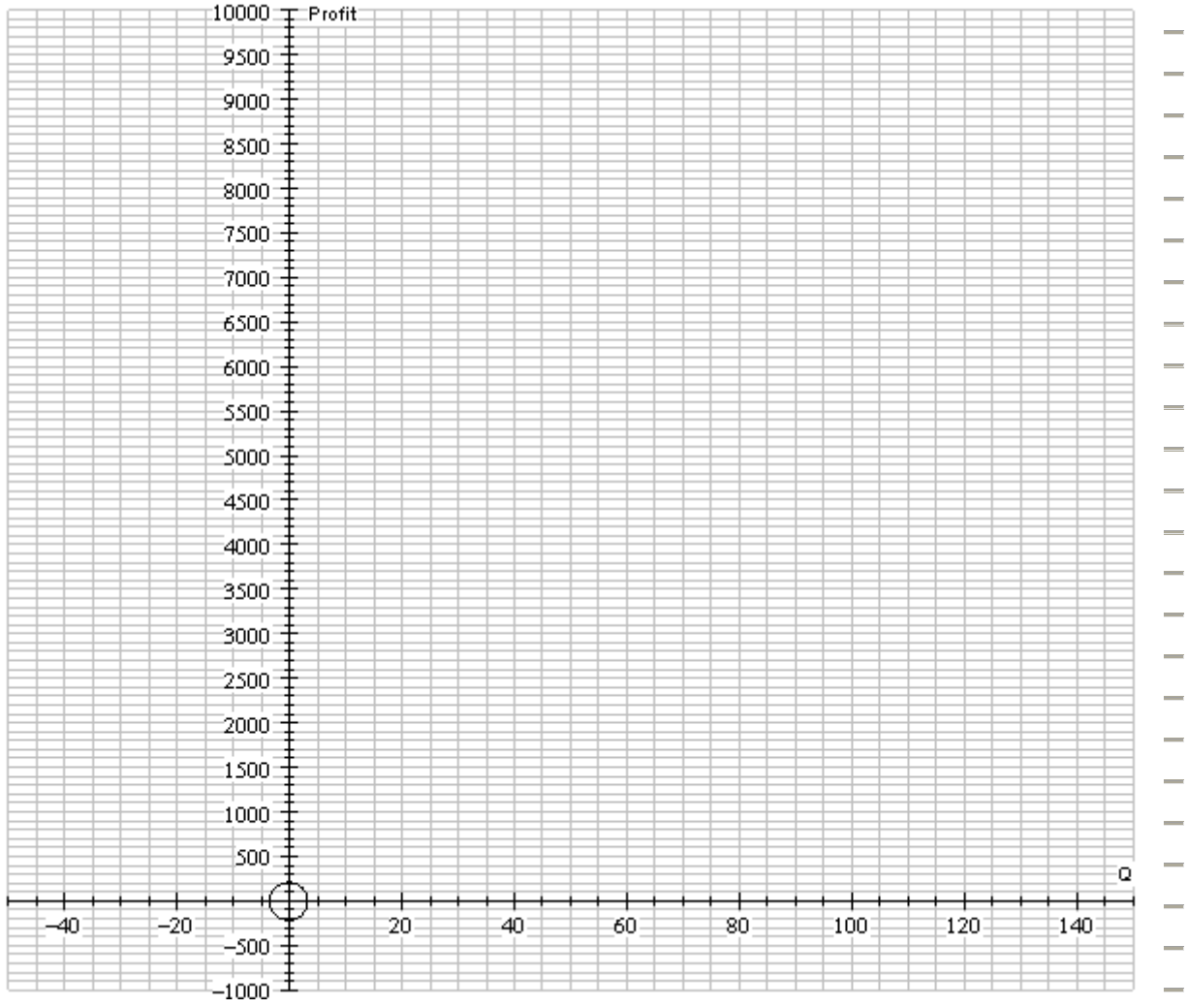
e) Using the grid below sketch the graph of the *profit* function. Show *maximum profit* and *break-even* points on the graph. **(3)**



(Total **17** marks)

Q7