

FUNCTIONS TEST A

Grade 10 Mathematics

Marks: 75

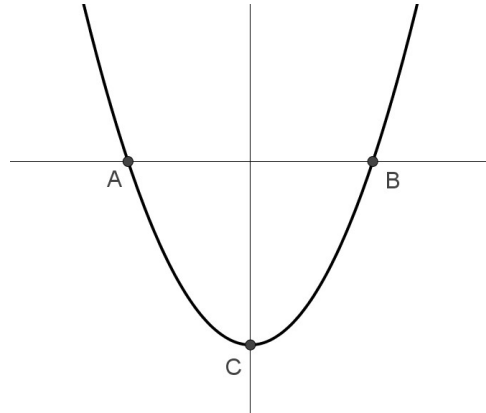
Time: 1,5 hours

Name: _____



QUESTION 1

Sketched below is the graph of $f(x) = x^2 - 9$



1.1 Determine the coordinates of A, B and C.

(4)

1.2 What is the equation of the axis of symmetry?

(1)

1.3 What are the coordinates of the turning point?

(1)

1.4 What is the domain of $f(x)$?

(2)

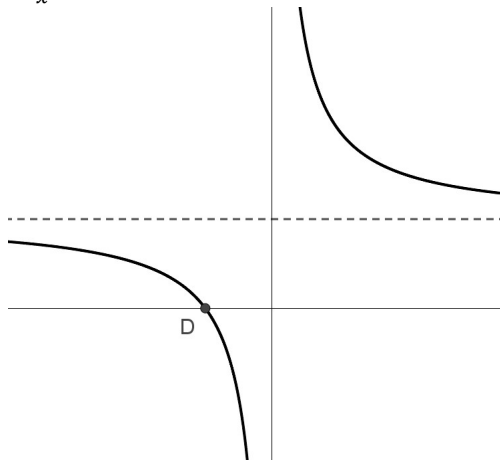
1.5 What is the range of $f(x)$?

(2)

[10]

QUESTION 2

Consider the function $g(x) = \frac{3}{x} + 2$ sketched below.



2.1 Determine the coordinates of D.

(3)

2.2 What are the equations of the asymptotes?

(2)

2.3 What are the equations of the axis of symmetry?

(2)

2.4 Write down the domain of $g(x)$.

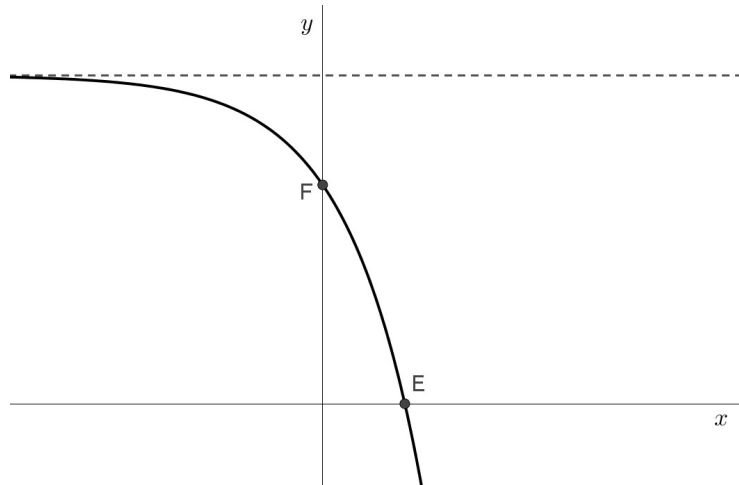
(2)

2.5 Write down the range of $g(x)$.

(2)

QUESTION 3

Sketched below is the graph of $h(x) = -4 \cdot 3^x + 12$



3.1 Determine the coordinates of E and F.

(6) S1209

3.2 Write down the equation of the asymptote.

(1) S1204

3.3 What is the domain of $h(x)$?

(2) S1206b

3.4 What is the range of $h(x)$?

(2) S1206b

[11]

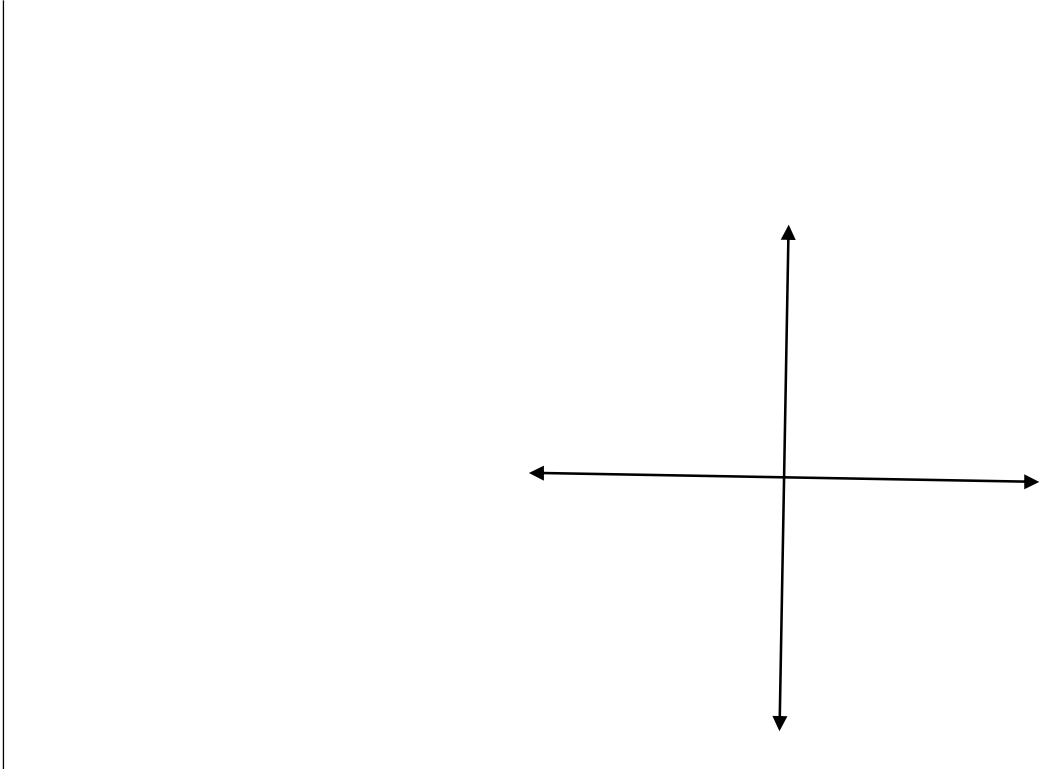
QUESTION 4

Sketch the following graphs on the given set of axes. Show all intercepts with the axes as well as any asymptotes, axis of symmetries or turning points:

S1202
S1207

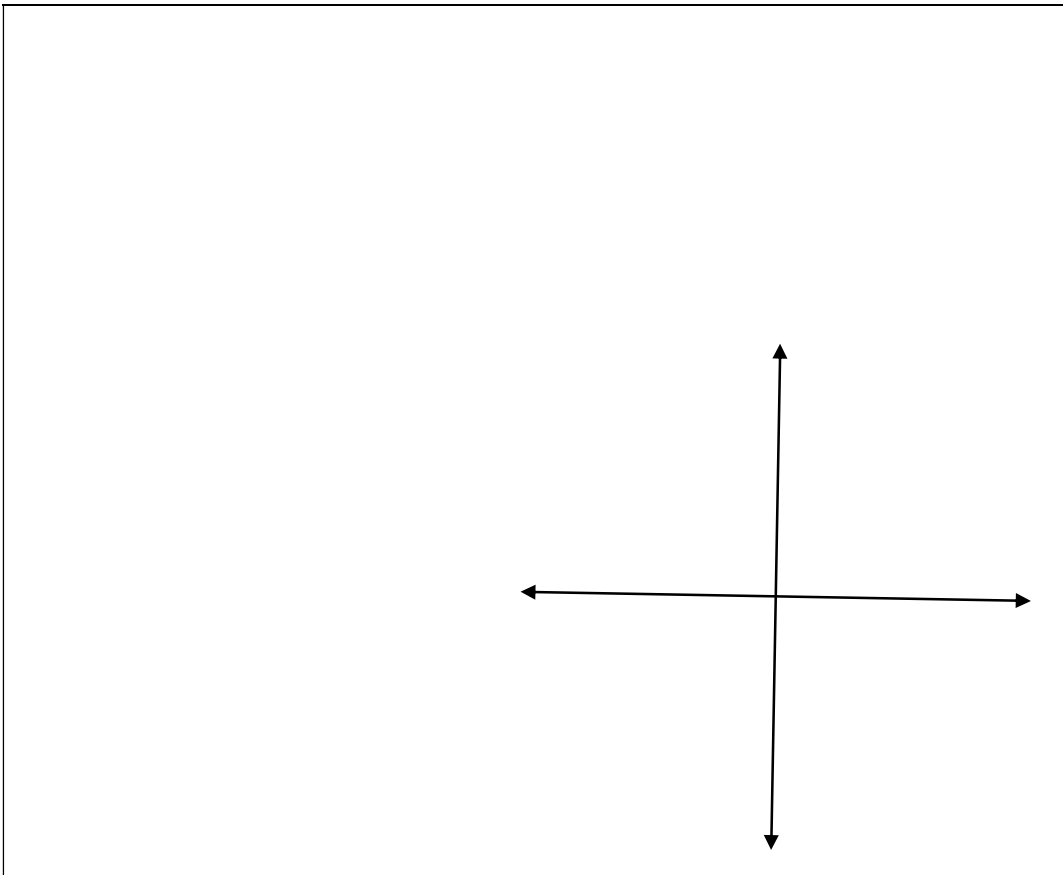
4.1 $y = 3x - 6$

(3)



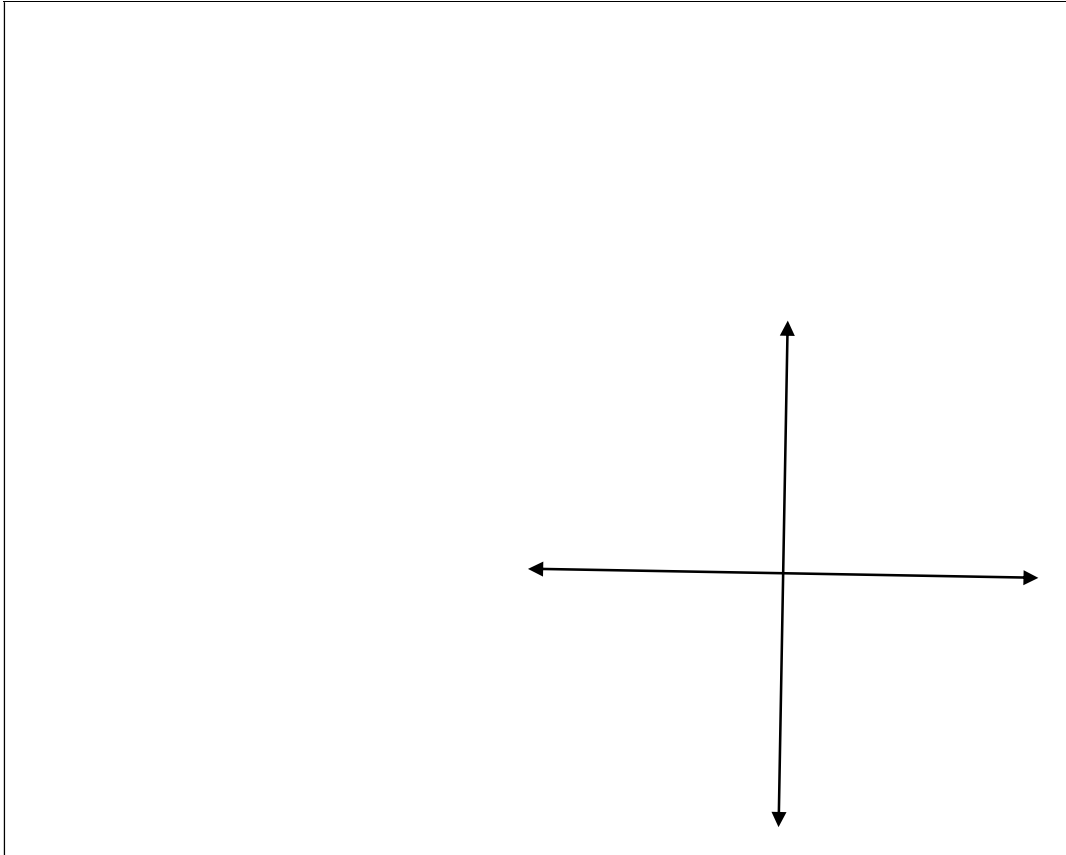
4.2 $y = -x^2 + 25$

(4)



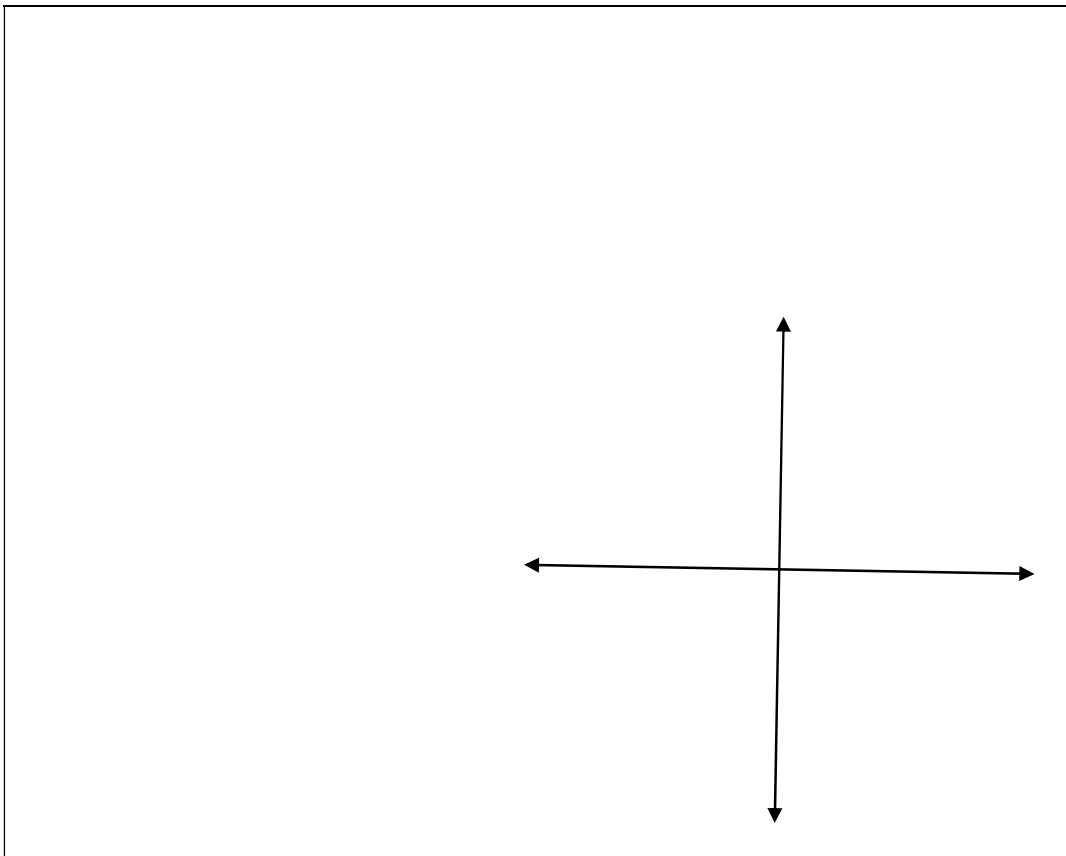
4.3 $y = \frac{-3}{x} - 1$

(5)



4.4 $y = \left(\frac{1}{2}\right)^x + 1$

(3)

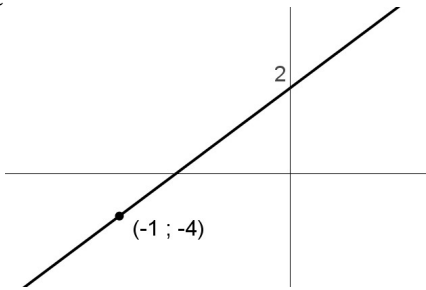


QUESTION 5

Determine the equations of the following functions in the form of $y = mx + c$, $y = ax^2 + q$, $y = \frac{a}{x} + q$ or $y = k^x + q$.

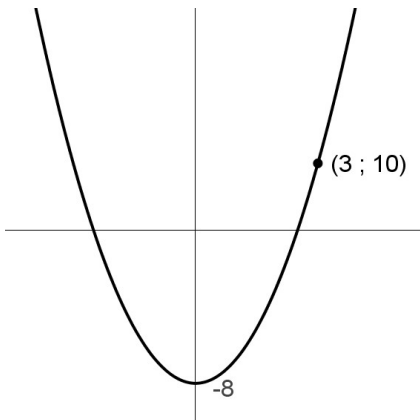
S1203
S1208

5.1



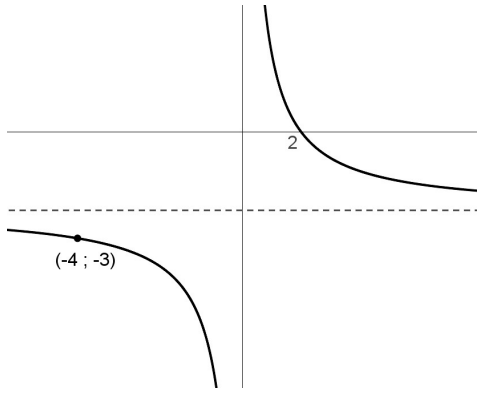
(3)

5.2

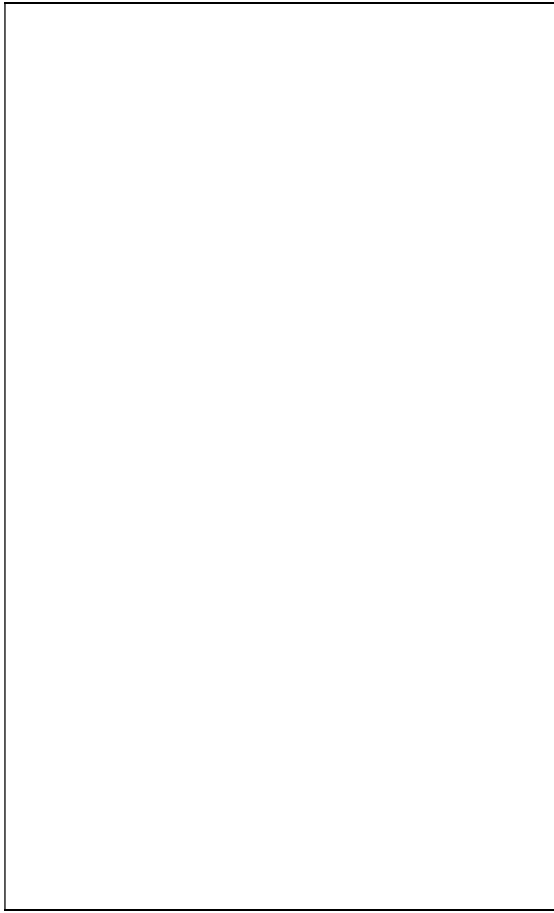


(3)

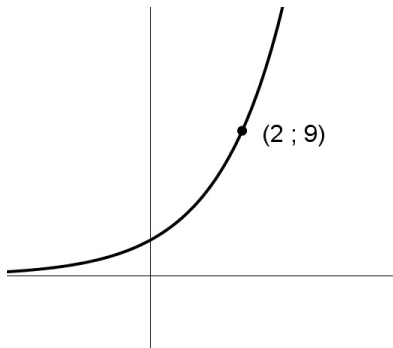
5.3



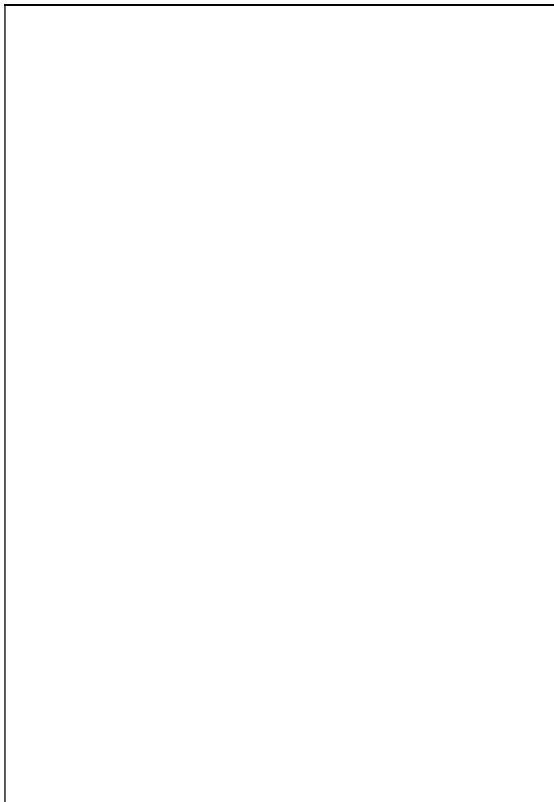
(4)



5.4



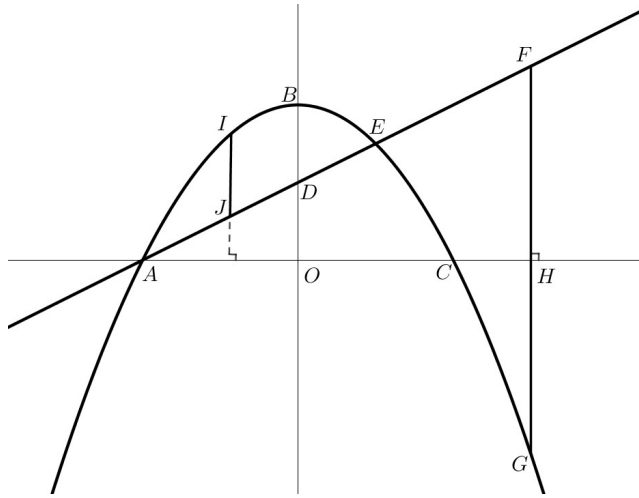
(3)



[13]

QUESTION 6

Given below are the graphs of $f(x) = -x^2 + 4$ and $g(x) = x + 2$



6.1 Determine the average gradient of $f(x)$ between $x = 1$ and $x = 3$.

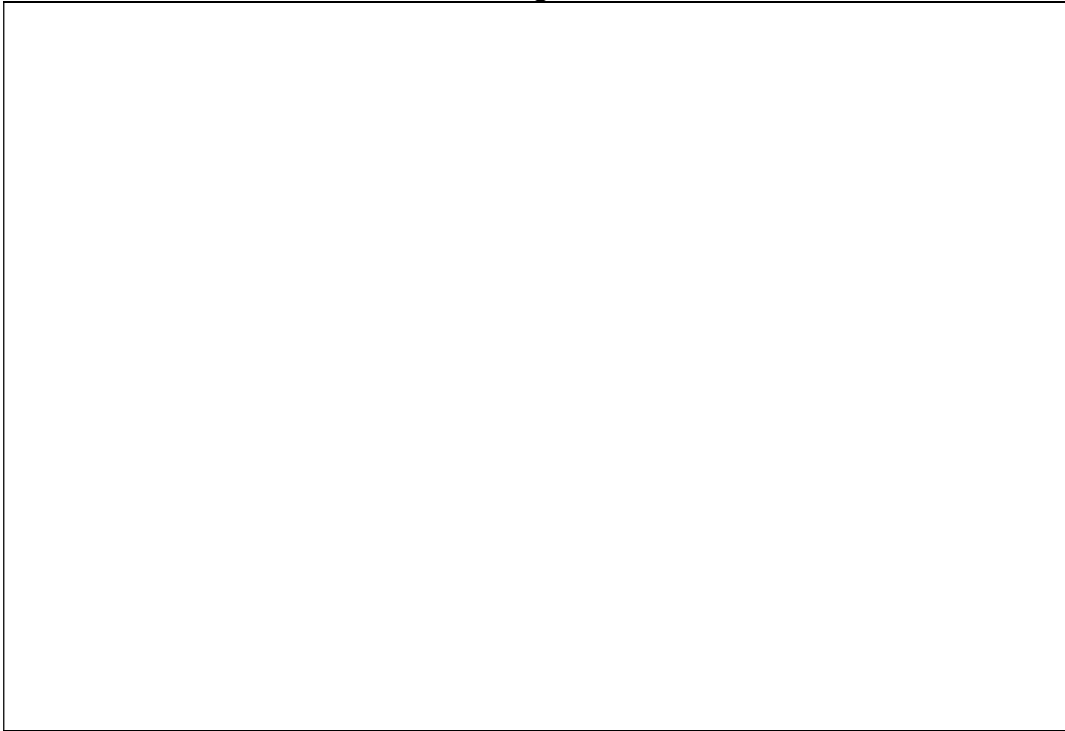
(4) S1205

6.2 Determine the coordinates of A and E

(5) S1209

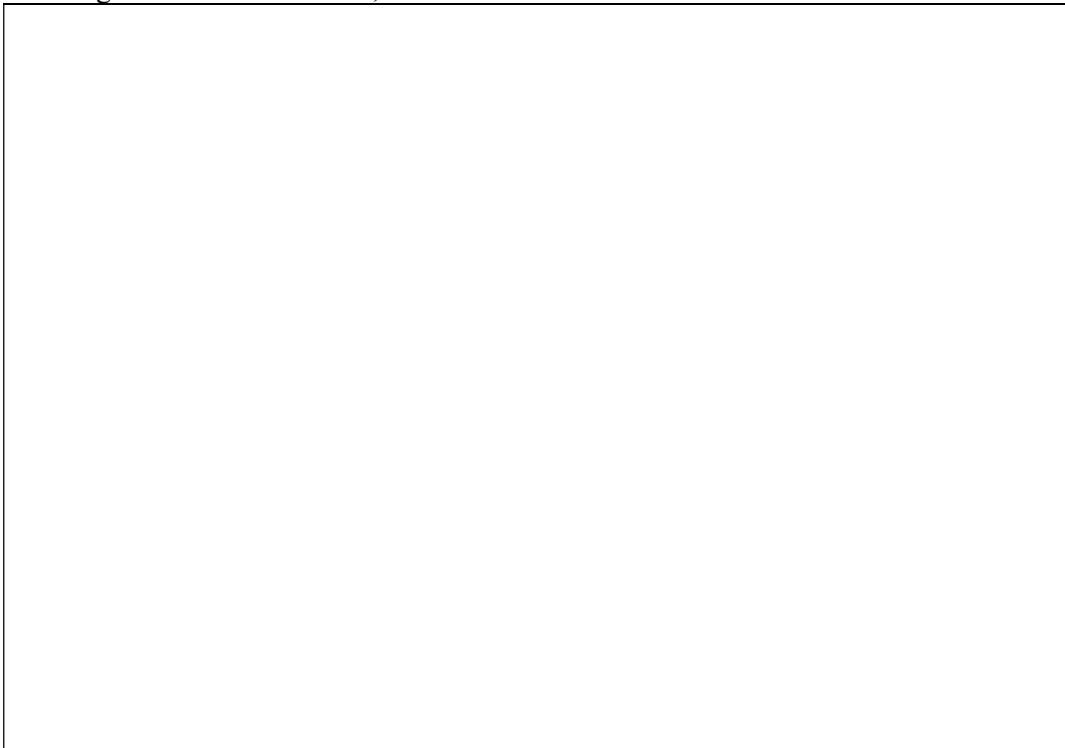
6.3 Given that OH is 3 units, determine the length of FG.

(3) S1209



6.4 If it is given that IJ is 2 units, determine the coordinates of I.

(3) S1209



[15]

Total: 75 Marks