Exam for candidates to HLAA

preDP2 January 2022

**P1 (90min)**

Name

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | sum |
| mark |  |  |  |  |  |  |  |  |  |
| max | 10 | 10 | 8 | 8 | 9 | 10 | 8 | 7 | 70 |

Q1 [10]

1. For what values of m the equation has at least one solution
2. For what values of m solutions have different signs.

Q2 [10]

Consider the function

1. Describe the sequence of geometric transformations that transformed into f(x)
2. Find equations of asymptotes and x and y intercepts of the graph of f(x)
3. Find the formula of and state the domain and range of

Q3 [8]

Consider functions

1. Find the formula (x) and state its domain and range
2. For what values of x is the composition (x) well defined?

Find the formula of (x) if it is defined and state its range.

Q4[8]

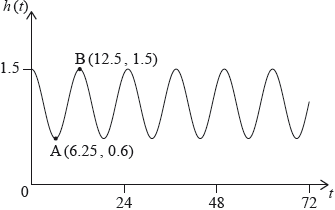
Let and

1. find the formula of in the simpliest form

1. Let A and B are x intercepts of f(x). Find the coordinates of A and B and their images on g(x).

Q5 [9]

At Grande Anse Beach the height of the water in metres is modelled by the function , where  is the number of hours after 21:00 hours on 10 December 2017. The following diagram shows the graph of  , for .



The point  represents the first low tide and  represents the next high tide.

How much time is there between the first low tide and the next high tide? *[1mark]*

**b.** *[1 mark]* Find the difference in height between low tide and high tide.

**c.** *[1 mark]* Find the value of ;

**d.** *[2 marks]* Find the value of ;

**e.** *[1 marks]* Find the value of .

**f.** *[3 marks]* There are two high tides on 12 December 2017. At what time does the second high tide occur?

Q6 [10]

Solve if

Q7 [8]

Consider function

1. Express f(x) in the form
2. For sketch the graph of *f*(x)
3. For find
4. Find

Q8 [7]

Obraz zawierający tekst

Opis wygenerowany automatycznieObraz zawierający tekst, antena

Opis wygenerowany automatycznie