**S5 CORE MATHEMATICS, COMPREHWNSIVE MARKING SCHEMES 2019**

**Answer 1 ( 3marks)**

 = (

2) If  and ; find the value of  without use of calculator **( 6marks)**

**Answer 2** **6marks**

 and 



=





Answer 3 **(4marks)**



to solve this use the right triangle for the hypotenuse *x.* Since the side length given is opposite the angle given , we can use the sine function.

Therefore Sin(230) = 2500m / *x*

*x* = 6398.3 meters

**answer 4**

**a) 3marks**

****



**b)4marks**



**Solution 5 (6marks)**

Let father’s age be x years

Son’s ages = y years

Then 2y + x = 56 …………… (i)

And 2x + y = 82 …………… (ii)

Multiplying equation (i) by 2, (2y + x = 56 …………… × 2)we get



or, 3y/3 = 30/3

or, y = 30/3

or, y = 10 (solution (ii) and (iii) by subtraction)

Substituting the value of y in equation (i), we get;

2 × 10 + x = 56

or, 20 + x = 56

or, 20 – 20 + x = 56 – 20

or, x = 56 – 20

x = 36

**Answer 6 (4marks)**





**ANSWER 7 (5marks)**

Let the needed angle be t, use Snell’s law to write



**Answer8. ( 5marks)**

 and 



Therefore



fiftieth term of the sequence is 150

**Answer 9 (6marks)**

 

 to be excluded.

Or 



**Answer 10**

 **( 6marks)**

 

 =1x1



**Answer11**:**5marks**

 Let A be a set of students who play Volleyball and B a set of students who play basketball; then the set of students who play both games is

A∩ B . We have P(A) =32%= 0.32;

 P (A ∩B) = 18% = 0.18 .

 We have to find the probability of B known that A has occurred.

 

**answer 12)**

 a) Complete the table below **(12marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  | () |
| 3 | 2 | -4 | -2.6 | 10.4 |
| 5 | 3 | -2 | -1.6 | 3.2 |
| 6 | 4 | -1 | -o.6 | 0.6 |
| 8 | 6 | 1 | 1.4 | 1.4 |
| 9 | 5 | 2 | 0.4 | 0.8 |
| 11 | 8 | 4 | 3.4 | 13.6 |
|  |  |  |  |  |
|  |  |  |  |  |

b)The Covariance of  and  or  **(3marks)**



**answer 13**  (**5marks)**

the equation of the sphere passing through the given circle is 

as this sphere passes through the point  we find  or 

 therefore the equation of the sphere is  or 

answer **14 a 2marks**

a) 



1. **5marks**





Answer 15a **( 4marks)**

a) the derivative of the function  is 

**b)6marks**

 the derivative of 

the derivative of

 

if  ; 

**Answer 16 6marks**





