**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 

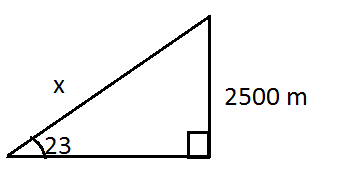


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Answer 3 **(4marks)**



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**

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**b)4marks**

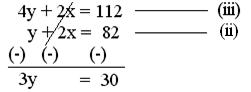


**Solution 5 (6marks)**  
  
Let father’s age be x years

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

[](https://www.math-only-math.com/images/linear-equations.jpg)

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**





