

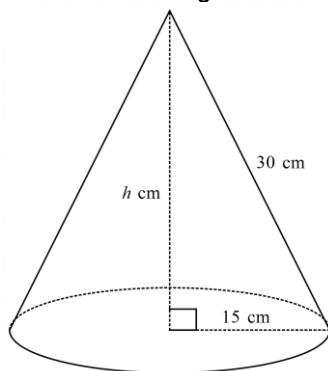
# Creating User Defined Functions for Further Mathematics Modules

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Each of the questions included here can be solved using either the TI-Nspire CX or CX CAS.

## Question 1

Calculate the height of the cone shown below, rounded to two decimal places:



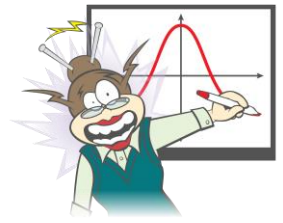
Response:

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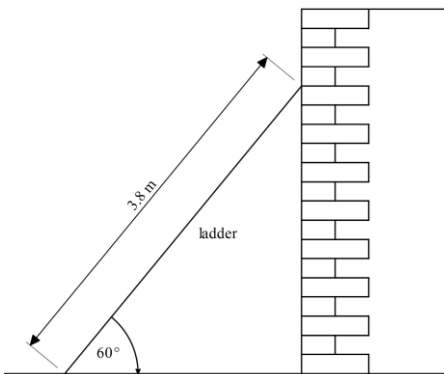
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### Question 2

Calculate the height the ladder reaches up the wall in the diagram below, writing your answer to two decimal places:



Response:

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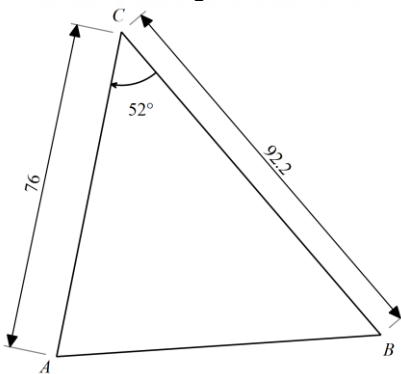
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### Question 3

Calculate the length of AB for the triangle shown below to 2 decimal places. Lengths are measured in cm:



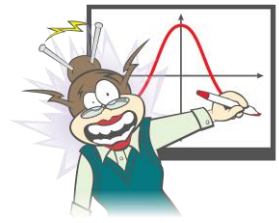
Response:

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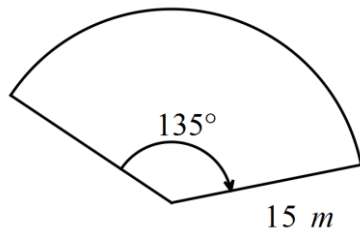
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#### Question 4

Calculate the area of the sector as shown in the diagram below to 3 significant figures:



Response:

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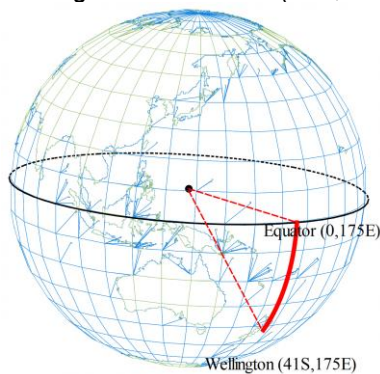
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#### Question 5

Wellington is located at  $(41\text{S}, 175\text{E})$  as shown in the diagram below:



Calculate the distance to the equator to the nearest km if the radius of the earth is 6400 km.

Response:

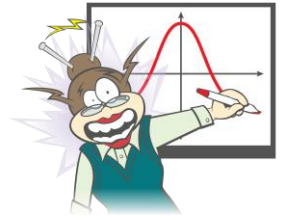
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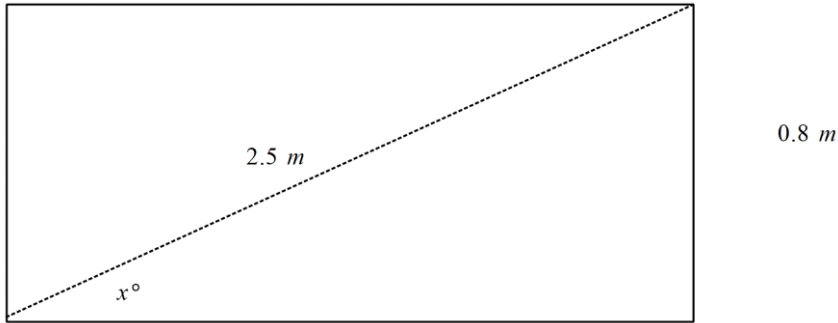
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Now your try!!



**Question 1**

A window in the wall of a house has the following dimensions:



Calculate the value of the angle to the nearest degree.

Response:

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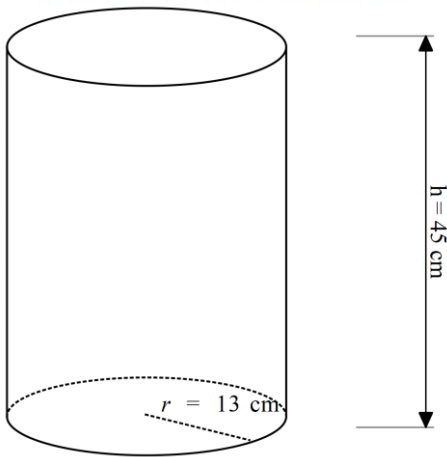
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**Question 2**

Calculate the diagonal of the cylinder with dimensions shown to two decimal places:



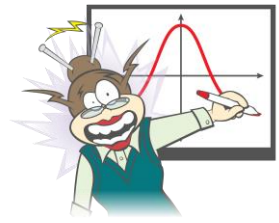
Response:

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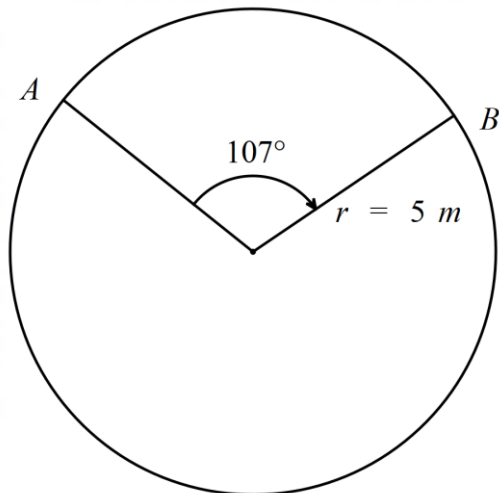
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### Question 3

Calculate the length of arc in the diagram shown to three significant figures:



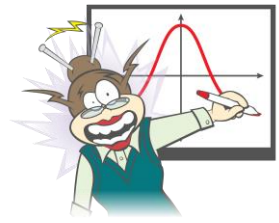
Response:

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## Answers

### Question 1

Answer = 25.98 cm

Take note of the screen shot when the program is run below. Note that the “?” is entered for the unknown value.

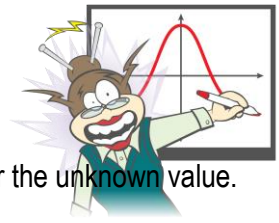
```
1.1 *Doc DEG X
fm_web\pythag()
a = 15
b = ?
c = 30
Answer:
?=-25.9807621135 or ?=25.9807621135
Done
```

### Question 2

Answer = 3.29 m

Take note of the screen shot when the program is run below. Note that the “?” is entered for the unknown value.

```
1.1 *Doc DEG X
fm_web\sin_ratio()
Opposite Side, o= ?
Hypotenuse, h= 3.8
Angle,  $\theta$ = 60
Answer: 3.29089653438
Done
```



### Question 3

Answer = 75.16 m

Take note of the screen shot when the program is run below. Note that the “?” is entered for the unknown value.

```
1.1 *Doc DEG X
fm_web\cos_rule()
-----
Angle C: 52
Side c: ?
Side a: 76
Side b: 92.2
Answer: 75.1579258641
-----
Done
```

### Question 4

Answer = 265 m<sup>2</sup>.

Take note of the screen shot when the program is run below. Note that the “?” is entered for the unknown value.

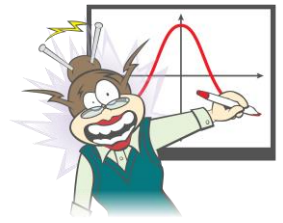
```
1.1 *Doc DEG X
fm_web\area_sector()
-----
radius, r: 15
angle,  $\theta$  135
area, a: ?
Answer: ?=265.071880147
-----
Done
```

### Question 5

Answer = 4580 km.

Take note of the screen shot when the program is run below. Note that the “?” is entered for the unknown value.

```
1.1 *Doc DEG X
fm_web\arc_length()
-----
radius = 6400
angle = 41
arc length ?
Answer: ?=4579.74395723
-----
Done
```



Now your try

### Question 1

Answer =  $19^\circ$ .

```
1.1 *Doc DEG
fm_web\sin_ratio()
-----
Opposite Side, o= 0.8
Hypotenuse, h= 2.5
Angle,  $\theta$ = ?
Answer: 18.6629248849
-----
Done
```

### Question 2

Answer = 51.97 cm

```
1.1 *Doc DEG
fm_web\pythag()
-----
a = 26.
b = 45.
c = ?
Answer:
?=-51.9711458407 or ?=51.9711458407
-----
Done
```

### Question 3

Answer = 9.34 m.

```
1.1 *Doc DEG
fm_web\arc_length()
-----
radius = 5
angle = 107
arc length ?
Answer: ?=9.33751149817
-----
Done
```