

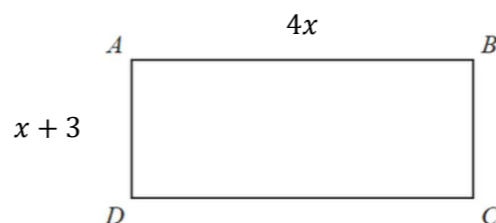
There are 15 cards in a box.
Each card has one number on it.

There is an even number on 9 of the cards.
There is an odd number on 6 of the cards.

Three cards are going to be taken at random from the box.
The numbers on the cards will be added together to give a total.

Find the probability that the total is an odd number.
You must show all your working.

5 marks

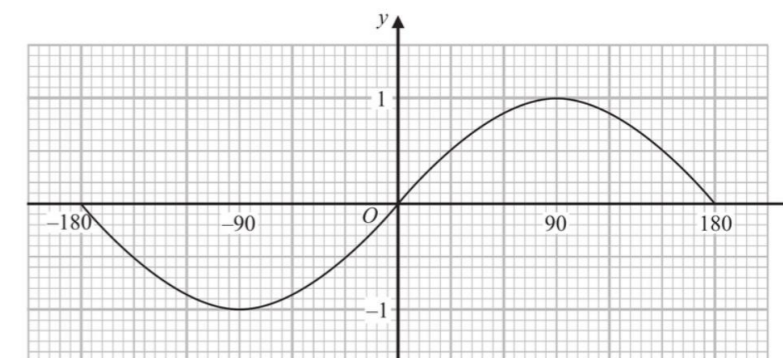


The perimeter of the rectangle is **50 cm correct to the nearest cm**.

Find the error interval for x .

3 marks

Here is a graph of $y = \sin x^\circ$ for $0 \leq x \leq 360$.

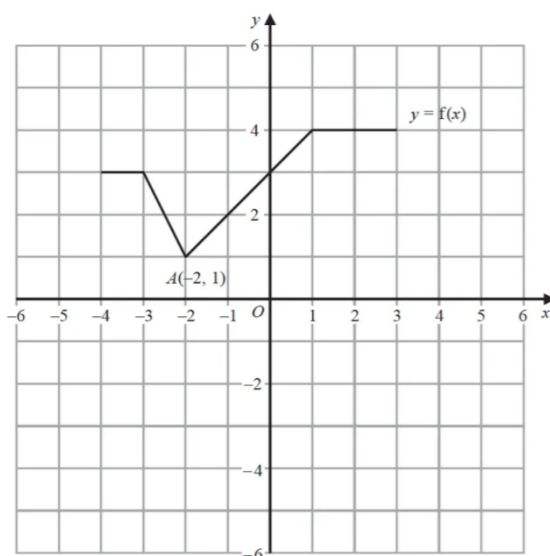


Use the graph to find the solutions of

$$2\sin x = -1 \text{ for } -180 \leq x \leq 180.$$

2 marks

The graph of $y = f(x)$ is shown on the grid.



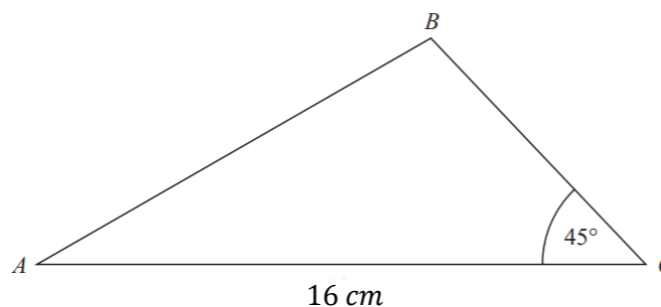
(a) On the grid, draw the graph with equation $y = f(x + 1) - 3$

When the graph of $y = f(x)$ is transformed to the graph with equation $y = f(-x)$, point A is mapped to point B .

(b) Write down the coordinates of point B .

3 marks

Here is triangle ABC .



Triangle ABC has an area of 32 cm^2 .
Work out the exact length of BC .



4 marks

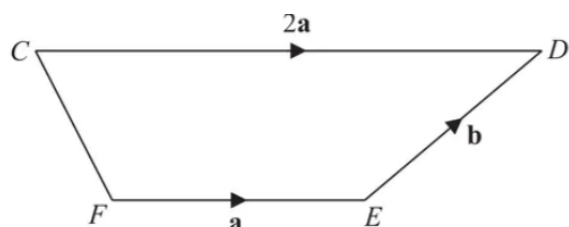
Solve algebraically the simultaneous equations

$$2x^2 - y^2 = 17$$

$$x + 2y = 1$$

5 marks

$CDEF$ is a quadrilateral.



$$\vec{FE} = \mathbf{a} \quad \vec{ED} = \mathbf{b} \quad \vec{CD} = 2\mathbf{a}$$

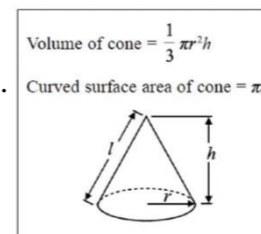
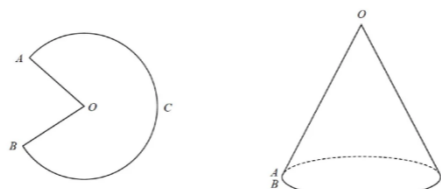
The point P is such that CEP are in a straight line and that $CE = EP$.

Use a vector method to prove that CF is parallel to DP .

4 marks

The diagram shows a sector $OACB$ of a circle with centre O .

The point C is the midpoint of the arc AB .
The diagram also shows a hollow cone with vertex O .
The cone is formed by joining OA and OB .



The cone has volume **56.8 cm³** and height **3.6 cm**.

Calculate the size of angle AOB of sector $OACB$.
Give your answer correct to **3 significant figures**.
You must show all your working.

5 marks

Find algebraically the set of values of x for which

$$4x^2 - 49 > 0 \text{ and } 4x^2 - 13x - 35 > 0$$

5 marks

ANSWERS

