1 **(a)** It is given that $N = 0.\dot{5}\dot{7}$.

Show that $99N = 57$.

.....

.....

.....

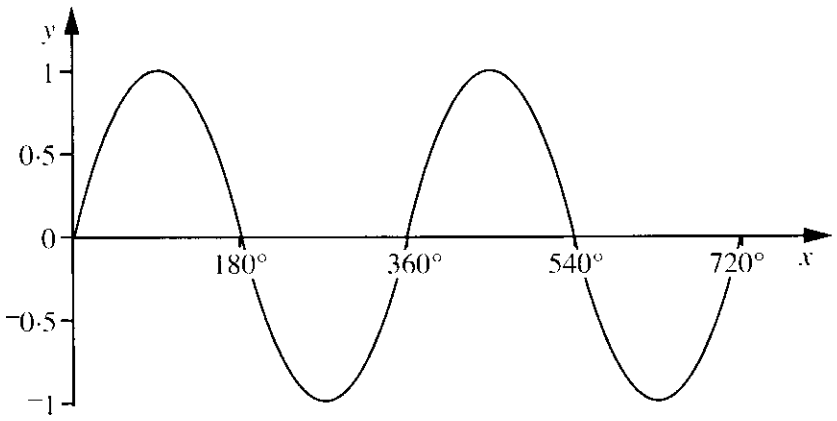
.....[2]

(b) Hence express $0.0\dot{5}\dot{7}$ as a fraction in its lowest terms.

(b) .....[2]

4

2



The diagram shows the graph $y = \sin x$ for $0° \leqslant x \leqslant 720°$.
The value $x = 30°$ satisfies the equation $\sin x = 0.5$.

Find the 3 other values of x which satisfy $\sin x = 0.5$ for $0° \leqslant x \leqslant 720°$.

.....[2]

2

3 Simplify.

(a) $\dfrac{3}{x-1} - \dfrac{2}{x+1}$

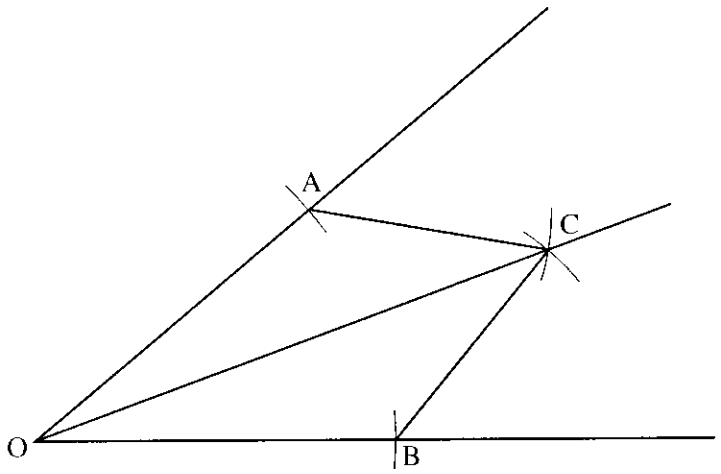
(a) .....[3]

(b) $\dfrac{x^2-9}{x^2+x-12}$

(b) .....[3]

6

4



James has used a ruler and compasses to construct the bisector of angle AOB.

By proving two triangles congruent show that angle AOC = angle BOC.

.....

.....

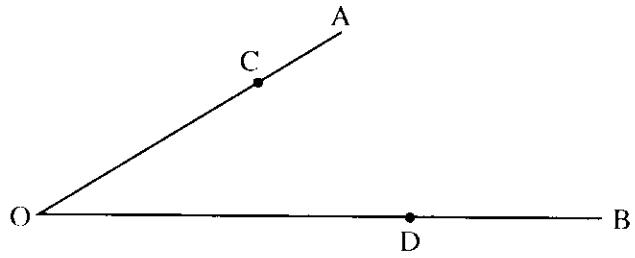
.....

.....

.....[3]

3

5



Not to scale

In the diagram,
$\overrightarrow{OC} = 2\overrightarrow{CA}$, $\overrightarrow{OD} = 2\overrightarrow{DB}$, $\overrightarrow{OA} = 3\mathbf{a}$, $\overrightarrow{OB} = 3\mathbf{b}$.

(a) Work out in terms of **a** and **b**.

(i) $\overrightarrow{OC}$

(a)(i) .....[1]

(ii) $\overrightarrow{AB}$

(ii) .....[1]

(iii) $\overrightarrow{CD}$

(iii) .....[2]

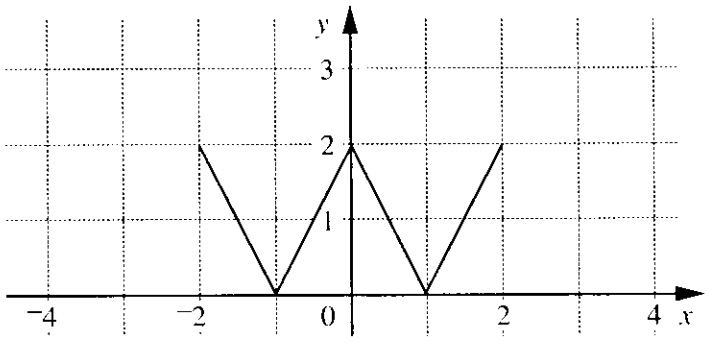
(b) State two facts about the relationship between AB and CD.

.....

.....[2]

6

6 This diagram shows the graph of $y = f(x)$.

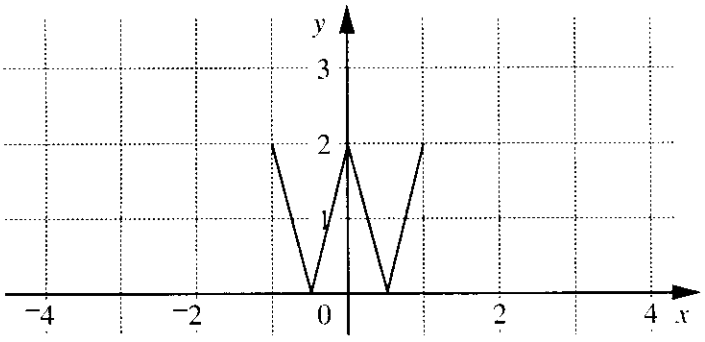


The two graphs below are transformations of $y = f(x)$.

Choose the correct equation for each graph.

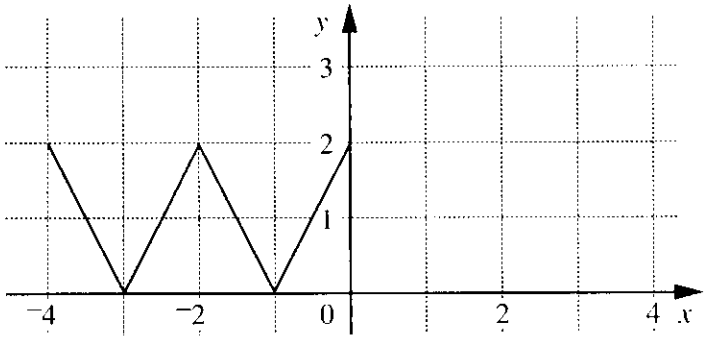
$y = f(x + 2)$	$y = f\left(\frac{x}{2}\right)$	$y = f(x - 2)$	$y = \frac{1}{2}f(x)$
$y = f(2x)$	$y = f(x) - 2$	$y = 2f(x)$	$y = f(x) + 2$

(a)



(a) Equation $y =$ .....[2]

(b)



(b) Equation $y =$ .....[2]

[4]