

(49) Sine, Cosine & Tangent Graphs

WORKING AT D/E

(1) On separate sets of axes, sketch the graphs of:

(i) $y = \cos(x)$, $0 \leq x \leq 360$

(ii) $y = \sin(x)$, $0 \leq x \leq 360$

(iii) $y = \tan(x)$, $0 \leq x \leq 360$

For each graph, show where the curve meets the coordinate axes, any maximum or minimum points and the equations of any asymptotes.

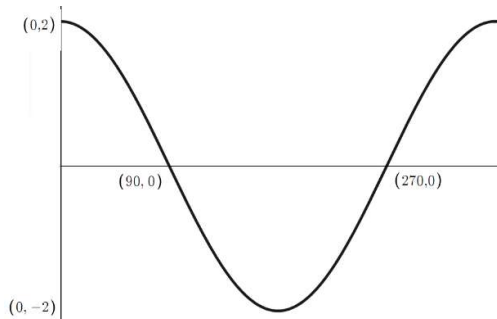
(2) Complete the following sentences:

The graph of $y = \sin(x)$ cycles every _____

The graph of $y = \tan(x)$ cycles every _____

The graph of $y = \cos(x)$ cycles every _____

(3) Beryl draws what she thinks is the graph of $y = \sin(x)$, $0 \leq x \leq 360$



Write down two errors with she has made.

WORKING AT B/C

(1) On separate sets of axes, sketch the graphs of:

(i) $y = \cos(x)$, $-360 \leq x \leq 360$

(ii) $y = \sin(x)$, $-360 \leq x \leq 360$

(iii) $y = \tan(x)$, $-360 \leq x \leq 360$

For each graph, show where the curve meets the coordinate axes, any maximum or minimum points and the equations of any asymptotes.

(2) (a) On the graph of $y = \sin(x)$, $0 \leq x \leq 360$,

$y = \frac{\sqrt{3}}{2}$ when $x = 60^\circ$. Where else on the graph will $y = \frac{\sqrt{3}}{2}$?

(b) On the graph of $y = \cos(x)$, $0 \leq x \leq 360$, $y = 0$ when $x = 90^\circ$. Where else on the graph will $y = 0$?

(c) On the graph of $y = \tan(x)$, $0 \leq x \leq 540$, $y = 1$ when $x = 45^\circ$. Where else on the graph will $y = 1$?

(3) Write down any lines of symmetry for each graph

(i) $y = \cos(x)$, $-360 < x < 360$

(ii) $y = \sin(x)$, $-180 < x < 180$

(iii) $y = \tan(x)$, $-360 < x < 360$

WORKING AT A*/A

(1) By considering the graphs of \sin , \cos and \tan , tick any of the following statements that are true:

1. $\sin(x) \equiv \sin(180 - x)$
2. $\sin(x) \equiv \sin(180 + x)$
3. $\cos(x) = \cos(360 + x)$
4. $\sin(x) \equiv \sin(360 + x)$
5. $\tan(x) = \tan(360 + x)$
6. $\cos(360 - x) = \cos(x)$
7. $\tan(x) = \tan(180 + x)$
8. $\sin(-x) \equiv -\sin(x)$
9. $\cos(x) \equiv \sin(90 - x)$
10. $\tan(-x) = -\tan(x)$
11. $\cos(x) \equiv \cos(180 + x)$
12. $\cos(x) = \cos(-x)$

(2) Find all of values of x given $0 < x < 360$ for

(a) $\tan(x) = -1$

(b) $\sin(x) = -\frac{\sqrt{3}}{2}$

(c) $\cos(x) = \frac{1}{\sqrt{2}}$

(d) $\cos(x) = -0.1$

(e) $\tan(x)$ is undefined.

(f) $\sin(x) = -\frac{\sqrt{5}}{2}$

(3) How many points of intersection are there between each pair of graphs for $0 \leq x \leq 360$?

(a) $y = \cos(x)$ and $y = \sin(x)$

(b) $y = \cos(x)$ and $y = \tan(x)$

(c) $y = \tan(x)$ and $y = \sin(x)$