Exploring Trigonometric Graphs-1

Class XI

Aim: To explore plot of sine and cosine functions with respect to a unit circle.

Material: GeoGebra applet, student activity sheet

Instructions: In the given applet, drag point B along the unit circle. Observe the path traced by the point E. Now, answer the following questions and perform the suggested tasks.

Q1:	In general, how would you define the coordinates of point D?
A1:	
Q2:	The path traced by the point D is graph of f(x)=sinx, what should be the coordinates of the point, say E (note:your applet may name the point by some other letter) which will trace the graph of cosine function?
A2:	
Q3	Using input bar of the applet and plot point F (use coordinates from A2). Move point B along the circle.Is the point E following a path?
Q4:	Right click on E and select Trace On. Drag point B again, what do you observe?Describe the shape of the curve.
A4:	
Now that you have the graph of sine and cosine functions, answer the following questions. (You may drag the point B again to follow the traces and then answer the questions)	
Q5:	What is the horizontal midway line of each graph?
A5:	sinx ..... cosx .....
Q6:	What is the maximum of each graph?
A6:	sinx ..... cosx .....
Q7:	What is the minimum of each graph?
A7:	sinx ..... cosx .....

Q8:	What is the range of each graph?
A8:	sinx ..... cosx .....
Q9:	The amplitude of a graph is the greatest height the graph is above the horizontal midway line. What is the amplitude of each graph?
A9:	sinx ..... cosx .....
Q10:	When a graph repeats itself after a particular interval the interval is known as the period. What is the period of each graph?
A10:	sinx ..... cosx .....
Q11:	What difference if any is there between the curves of sin x and cos x?
A11:	

Extension: In the given applet, one by one plot points which will trace the graph of tanx, cotx , cosec x ,secx. (Hint: Use definition of each of these functions). Select Trace On for each of these four plotted points. Change colour of each point.Now, drag point B and recognize graph of each of the six t- functions. Select the path: File--->Export---->Graphics view to Clipboard Paste the captured view below