3 Geometry and trigonometry

Activity: Fourier waves

Background

* Many complicated waves can be broken down into simpler waves – this is called **Fourier analysis**.
* This can be done by combining different trigonometric functions.
* You can apply various operations to these functions (+ − × ÷) to create different combinations of functions.
* You can also put functions inside other functions (known as **composite** functions), such as *y* = sin (cos *x*) – note this is not multiplication; *x* is an angle put into the cosine function (to get a ratio); this ratio is then substituted into the sine function as the angle.

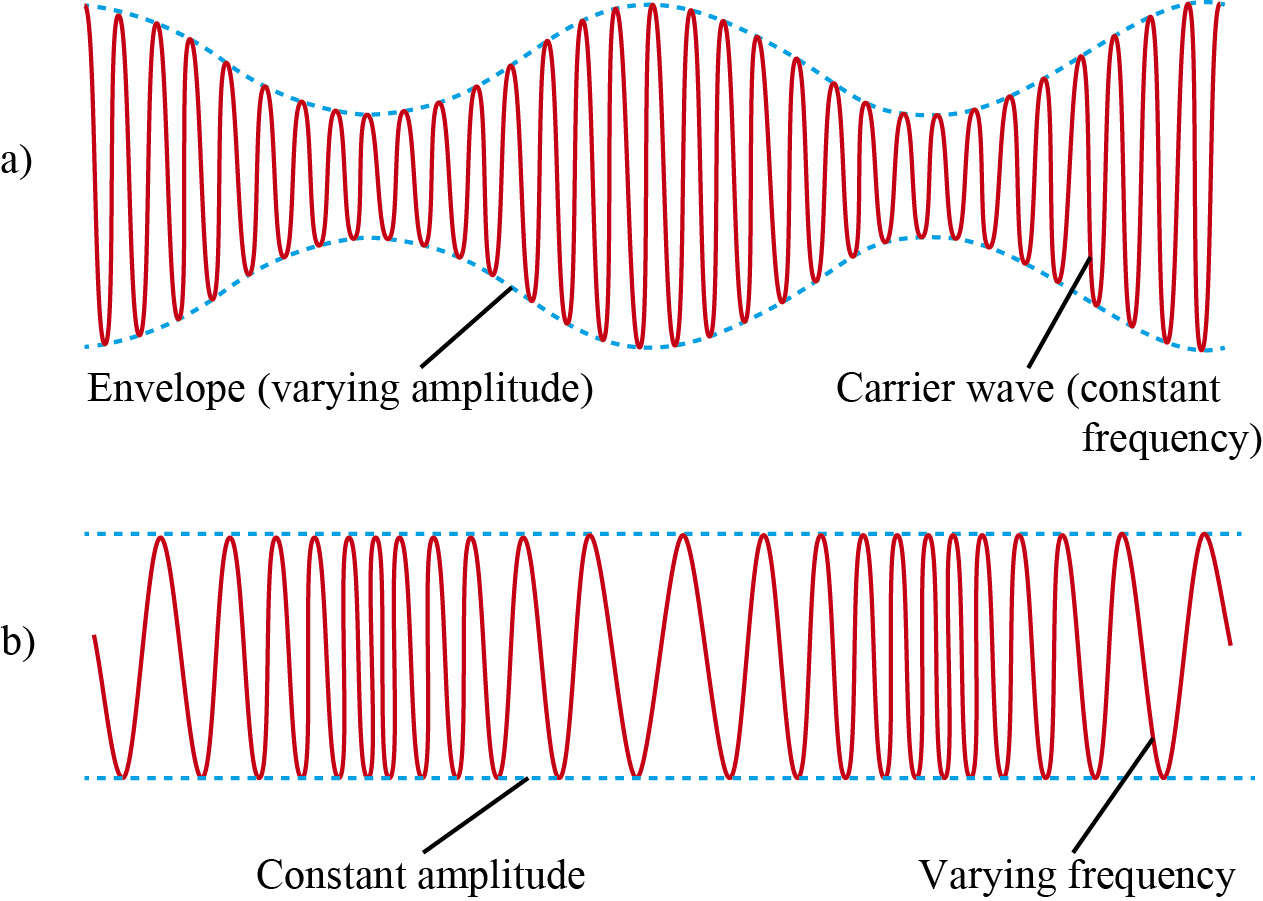
Problems

1 Try to make the function shown above.

2 Use the oscilloscope at the following website to create a periodic function (wave) and try to create an approximate function for it:   
<http://academo.org/demos/virtual-oscilloscope/>

3 Make your own functions to show to the class and see if they can come up with the actual function (try to limit it to two functions).

4 The images below show an AM waveform (amplitude modulation or change, Figure (a)) and an FM waveform (frequency modulation, Figure (b)).



5 Try to create the waves above on your GDC.