Mathematics – Trigonometry - Exercises

01 Complete the following table of equivalencies:

Angle (degrees)	Angle (radians)	Sine of the angle	Cosine of the angle	Tangent of the angle
-135				
	6			
		-0.5		-0.577
Small	Small			

02 Use the laws of sines and cosines to solve the triangle given the sides are 25, 60 and 65 units long (show your work).

03 Given the function:

$$y = -1.5e^{-0.5t}\sin(2\pi t - \frac{\pi}{4})$$

a) Calculate the period.
b) Calculate the frequency.σ
c) Calculate the time shift (phase shift).
d) Calculate the envelope time constant.
e) Carefully sketch the function versus time.
f) On the sketch indicate the amplitude envelope, period, time shift (phase shift) and time constant.

04 Earth travels around the sun in an orbit that is almost circular.
Assume that the orbit is a circle with a radius of 93,000,000 miles.
Its angular and linear speed are used in designing solar-power facilities.

a) Assume that a year is 365 days, find the angle (in radians) formed by Earth's movement in one day.
b) Give the angular speed in radians per hour.
c) Find the linear speed of Earth in miles per hour.