PROBLEM:

It is possible to rewrite the sinusoidal signal $x(t) = A\cos(\omega_\circ t + \phi)$ in the form:

$$x(t) = A\cos(\omega_\circ(t - t_1)) \tag{1}$$

(a) Determine a formula that gives the relationship between ϕ and t_1.

(b) When $x(t) = \sin(11\pi t)$ determine the value of t_1 that would be needed in the representation of equation (1).

(c) Prove that a peak of the cosine wave will always be at $t = t_1$.