PROBLEM:

The phase of a sinusoid $x(t) = A\cos(2\pi f_\circ t + \phi)$ can be related to the time shift of a positive peak.

(a) When the frequency is $f_\circ = 10$ Hz and the time of a positive maximum is $t_m = -0.04$ sec, determine the value for the phase ϕ (in radians).

(b) Now assume that the frequency $f_\circ$ is unknown. If the phase is $\phi = +\pi/2$ radians and $x(t)$ has one of its positive peaks at $t_m = 3$ sec, determine the *smallest value* for the frequency $f_\circ$ (in Hz). Make sure that your answer for $f_\circ$ is positive.

(c) The answer in part (b) was the smallest one, but there are many other solutions that also have $\phi = +\pi/2$ rads. and $t_m = 3$ sec. Give a general formula for all possible frequencies.