Name: _____

PHY 106 Test 2 July 7, 2005 20 minutes

La Salle University
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1. An ambulance traveling at 40 m/s is approaching a police car moving towards it at the same speed. The police siren is 520 Hz.

   a) What frequency is heard inside the ambulance (coming from the police siren)?

   b) What frequency is heard by the police after its siren reflects off of the ambulance?

$$f' = f\left(\frac{v + v_o}{v - v_s}\right)$$

2. A transverse wave on a string is described by $y(x,t) = 0.018\cos(6x + 3t)$ meters, where x is in meters and t is in seconds.

   a) Calculate the wavelength, frequency, and velocity of the wave.

   b) Calculate the maximum transverse velocity and acceleration of any point on the string.

   c) Determine the location on the string where the transverse velocity at t=0.1 sec is ½ of the maximum transverse velocity.

   d) If the tension in the string is 400 N, determine the linear mass density.

   e) If the generator that is used to create the wave in the string doubles its frequency (with amplitude the same), determine the new wave equation.