PHYS 211 Fall 2013 Sample Final Problem in Doppler Effect

Doppler Effect: . Speed of sound *v* = 343 m/s.

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| •55 | |  | | --- | |  |     A whistle of frequency 540 Hz moves in a circle of radius 60.0 cm at an angular speed of 15.0 rad/s. What are the (a) lowest and (b) highest frequencies heard by a listener a long distance away, at rest with respect to the center of the circle? |
| http://edugen.wileyplus.com/edugen/courses/crs4957/common/art/pixel.gif | http://edugen.wileyplus.com/edugen/courses/crs4957/common/art/pixel.gif |

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| •56 | An ambulance with a siren emitting a whine at 1600 Hz overtakes and passes a cyclist pedaling a bike at 2.44 m/s. After being passed, the cyclist hears a frequency of 1590 Hz. How fast is the ambulance moving? |
| http://edugen.wileyplus.com/edugen/courses/crs4957/common/art/pixel.gif | http://edugen.wileyplus.com/edugen/courses/crs4957/common/art/pixel.gif |

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| •57 | |  | | --- | |  |   A state trooper chases a speeder along a straight road; both vehicles move at 160 km/h. The siren on the trooper's vehicle produces sound at a frequency of 500 Hz. What is the Doppler shift in the frequency heard by the speeder? |