Multiple choice. Indicate the best answer.

1. A wave with amplitude 0.25 m constructively interferes with a wave with amplitude 0.5 m. What is the amplitude of the resulting wave?
   1. – 0.25 m
   2. 0 m
   3. 0.25 m
   4. 0.5 m
   5. 0.75 m
2. A wave with amplitude 0.5 m destructively interferes with a wave with amplitude 0.5 m. What is the amplitude of the resulting wave?
   1. – 0.1 m
   2. –0.5 m
   3. 0 m
   4. 0.5 m
   5. 1 m
3. When a wave changes direction as it travels from one medium to another, this phenomenon is called:
   1. Interference
   2. Reflection
   3. Refraction
   4. Diffraction
4. The phenomenon that describes waves bending around barriers is called:
   1. Interference
   2. Reflection
   3. Refraction
   4. Diffraction
5. The phenomenon that causes objects to appear bent when standing in water is called:
   1. Interference
   2. Reflection
   3. Refraction
   4. Diffraction
6. When two nearby sources produce waves with precisely the same frequency and the same amplitude, the amplitude of the resulting wave:
   1. is twice the amplitude of each source
   2. is half the amplitude of each source
   3. is the same as the amplitude of each source
   4. is zero everywhere
   5. varies from twice the amplitude to zero depending on where you measure

**Long Answer. Answer the following questions, showing all work.**

1. The following diagram shows the direction of a ray of light in air as it reaches the surface of a sheet of glass. The wave moves slower in glass than in air. Sketch and clearly label the following:
   1. A normal line
   2. An arrow representing the direction of the reflected portion of the wave in air.
   3. An arrow representing the direction of the refracted portion of the wave in glass.
   4. An arrow representing the direction of the wave after it passes through the glass and back into air.