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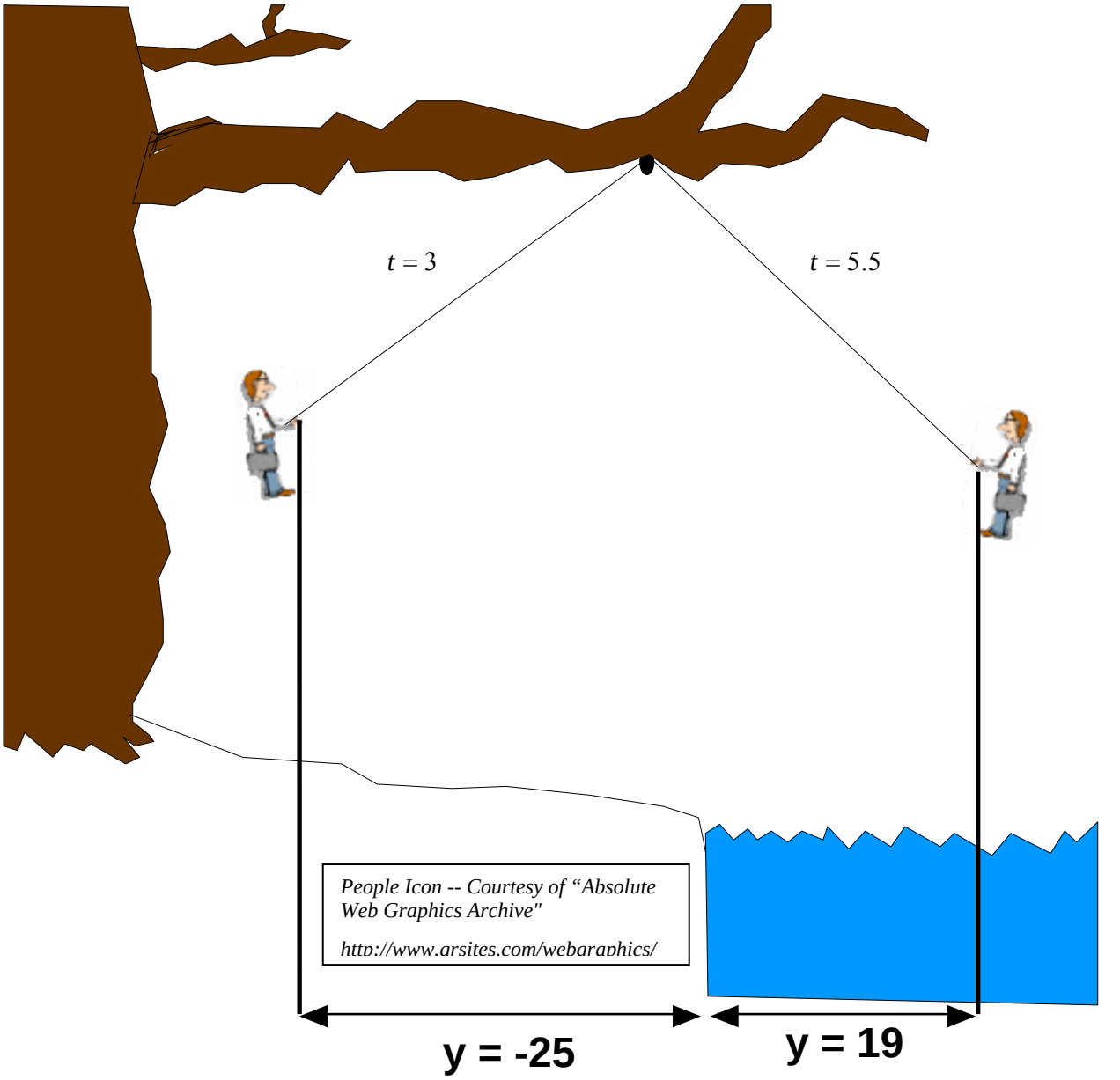
7:4 Worksheet: Kent Clark and the River Bank



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7:4 Worksheet: Kent Clark and the River Bank

Lois stumbles upon her boyfriend Kent Clark. He is swinging from a rope. Lois uses her trusty stopwatch, and finds that when t = 3 seconds, her boyfriend Kent Clark is at one end of his swing, where she measures the distance from the water to be y=-25 feet. Lois then records the time when Kent reaches the other end of the swing at 19 feet from the shoreline (over the water). This occurs at t=5.5 seconds. Lois yells at her boyfriend: "You think you are 'all that' swinging one handed on that rope while wearing a tie and holding a brief case. Let me tell you Kent Clark; you are no Man Super!"

Ignore the effects of gravity and air pressure during the small interval of time that Lois observes Kent. Answer the following questions:

1. Write the equation expressing Kent's distance from the river bank in terms of "t" and sketch the graph of the sinusoidal curve (don't use the graphics calculator – fit the data by hand)

   Answer

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2. Enter your equation into the graphics calculator and test it with Lois's recorded values.

   Observe the calculator graphs:

3. How long is Kent Clark over water during the 5.5 seconds Lois times him?

   Answer:

   Use the calculator graphs of your sinusoidal function to answer this question:

   Now do the math:

   Answer

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4. Where was Kent when Lois started the stopwatch?

   Use the calculator graphs to help you:

   Answer

5. Lois watches as Kent loses his grip on the rope at 6.6 seconds. Does Kent land in the water or on the land? Explain your answer in detail.

   Answer