



**Problem  
205**

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An astronaut surveyor sets a benchmark over a 12-inch vertical rod to date and mark the location of emergency supplies buried 50 ft directly below a newly discovered planet surface.

- a) Fifty years later a returning mission locates the benchmark and finds that the end tip of the rod has moved horizontally 2 inches from the vertical. How far has the buried supplies shifted from their original position relative to the surface? What assumptions have they made?
- b) Yet another 150 years pass, and a crew makes an emergency landing to find the buried supplies. The benchmark is found, but the rod has all but disintegrated. Where would the crew expect the supplies to be relative to the benchmark? What assumptions have they made?