

# ***FACULTY NOTES***

The LTAs and Spinoffs are designed so that each professor can implement them in a way that is consistent with his/her teaching style and course objectives. This may range from using the materials as out-of-class projects with minimal in-class guidance to doing most of the work in class. The LTAs and Spinoffs are amenable to small group cooperative work and typically benefit from the use of some learning technology. Since the objective of the LTAs and Spinoffs is to support the specific academic goals you have set for your students, the Faculty Notes are not intended to be prescriptive. The purpose of the Faculty Notes is to provide information that assists you to take full advantage of the LTAs and Spinoffs. This includes suggestions for instruction as well as answers for the exercises.



## FACULTY NOTES

### SPINOFF 10A

#### Exploring How NASA's Automated Window Inspection Device (AWID) Uses the Rectangular Coordinate System to Track Defects

#### AWID and the Rectangular Coordinate System

#### Plotting Window Defects

- 1) Scale: x-axis 0 to 0.25 in increments of 0.01; y-axis – 1.2 to 0 in increments of 0.03  
Note: Answers will vary.  
Location of Points: Quadrant IV  
Technology Tip: After students plot by hand, they can plot with a graphing calculator and adjust the viewing window to verify their graph paper plot.

#### Defects and Window Safety

- 2) In Exercise 1, you plotted the coordinates of defects found on an Orbiter window after the Orbiter returned from its most recent mission. Using the plot obtained in Exercise 1, analyze each scenario to determine if the window should be rejected or if it is safe for another Shuttle mission.

**Scenario 1** REJECT

**Scenario 2** REJECT

**Scenario 3** SAFE: Observe that  $d(A,J) = 0.008544 > 0.005$

**Scenario 4** SAFE: Since  $d(B,K) = 0.02154$ ;  $d(B,O) = 0.041773$ ;  
and  $d(K,O) = 0.039812$ , we see that at least one (in fact all three) of  
the distances is greater than 0.012.

**Scenario 5** REJECT : Area =  $(0.041)(1.167) = 0.047847 < 0.05$