## Curve Control

Teaching Guidelines

Subject: Mathematics
Topics: Algebra-Coordinate Systems, Patterns, Relations and Functions
Grades: 9-12

## Knowledge and Skills:

- Can plot a point in a two-dimensional coordinate system, given the coordinates, or determine the coordinates of a given point
- Can relate aspects of a graphical model to the real world situation which is being modeled


## Materials: None

Procedure: This activity is best done by students working individually or in teams of two.

Distribute the handout and ensure that students understand the task.
Answers:
1.

2. and 3. Answers vary.
cnann =

## Curve Control

Skill Set

1. These numbers represent the shape of a windsail mast. Plot the points and sketch the shape of the mast:

| $x($ centimeters) | $y($ centimeters) |
| :---: | :---: |
| 0 | 0 |
| 20 | 1 |
| 40 | 1.5 |
| 60 | 2 |
| 80 | 2.5 |
| 100 | 3 |
| 120 | 4 |
| 140 | 5 |
| 160 | 6 |
| 180 | 7 |
| 200 | 8 |


| x(centimeters) | $y($ centimeters) |
| :---: | :---: |
| 220 | 9 |
| 240 | 9.5 |
| 260 | 10 |
| 280 | 9.5 |
| 300 | 8.5 |
| 320 | 7.5 |
| 340 | 6 |
| 360 | 4 |
| 380 | 2 |
| 400 | 0 |

2. The mast youjust sketched has its highest curvature about two-thirds of the way toward the top. Create a set of numbers for a mast that has its highest curvature evencloser to the top of the mast. Keep the curve as smooth as youcan.

| $x($ centimeters) | $y($ centimeters) |
| :---: | :---: |
| 0 |  |
| 20 |  |
| 40 |  |
| 60 |  |
| 80 |  |
| 100 |  |
| 120 |  |
| 140 |  |
| 160 |  |
| 180 |  |
| 200 |  |


| $x($ centimeters $)$ | $y($ centimeters) |
| :---: | :---: |
| 220 |  |
| 240 |  |
| 260 |  |
| 280 |  |
| 300 |  |
| 320 |  |
| 340 |  |
| 360 |  |
| 380 |  |
| 400 |  |
|  |  |

Copyright © The FUTURES Channel, 2000. Permission is granted to transmit and copy this document for educational purposes so long as it is not altered and not sold. No page of this page which is not the entire page may be copied or transmitted in any form, physical or electronic, for any purpose, without express written permission from The Futures Channel.
3. Create a set of numbers for a mast that has its highest curvature right in the middle of the mast. Remember to keep the curve smooth.

| $x($ centimeters) | $y($ centimeters) |
| :---: | :---: |
| 0 |  |
| 20 |  |
| 40 |  |
| 60 |  |
| 80 |  |
| 100 |  |
| 120 |  |
| 140 |  |
| 160 |  |
| 180 |  |
| 200 |  |


| $x($ centimeters) | $y($ centimeters) |
| :---: | :---: |
| 220 |  |
| 240 |  |
| 260 |  |
| 280 |  |
| 300 |  |
| 320 |  |
| 340 |  |
| 360 |  |
| 380 |  |
| 400 |  |

