

Basic Functions

- 1) Line  $y = mx + b$ .
- 2) Absolute value  $y = |x|$
- 3) Parabola  $y = ax^2 + bx + c$
- 4) Cubic  $y = ax^3 + bx^2 + cx + d$
- 5) Higher order polynomial  $y = ax^n + bx^{n-1} + cx^{n-2} + \dots$
- 6) Hyperbola  $y = \frac{c}{x}$
- 7) Square root  $y = \sqrt{x}$
- 8) Semicircle – top  $y = \sqrt{r^2 - x^2}$  or bottom  $y = -\sqrt{r^2 - x^2}$
- 9) Step  $y = [x]$ , or in the handheld  $y = \text{int}(x)$
- 10) Cube root  $y = \sqrt[3]{x}$
- 11) Exponential  $y = 2^x$
- 12) Tangent  $y = \tan(x)$
- 13) Sinusoid  $y = \sin(x)$
- 14) Polar  $r = f(\theta)$
- 15) Parametric  $(x, y) = (f(t), g(t))$

Draft Requirements (subject to change):

- 1) At least 60 frames. 30 of the frames must be distinct, and you may repeat frames to bring the total to 60.
- 2) At least 20% of pictures must have a sinusoid which animates either by transformation or restricted domain.
- 3) At least 30% of picture must have a parametric or polar curve which animates either by transformation or restricted domain.
- 4) To be eligible for a C you must use 5 different basic functions.
- 5) To be eligible for a B you must use 7 different basic functions, have a photo background, and synchronize to music.
- 6) To be eligible for an A you must use 9 different basic functions and synchronize to music and have original background photos (photos taken by your group members).
- 7) Use of more different basic functions makes you eligible for bonus points.
- 8) 90% of functions must have some transformation from the basic function.
- 9) 80% of functions must have a restricted domain.

Bonus points will be awarded for extreme creativity.

## Flipbook Project 2015

### Deliverables (what you will turn in):

- 1) Summary storyboard of your project (due 5/18). One per group.
- 2) A photo or photos for background images (due 5/22). Remember photos with students in them require a Model Release Form for each student included.
- 3) An Nspire file or files with all the relevant screens. (due 5/29) One per group.
- 4) A listing of your functions. Where a particular function was transformed on different screens you may list just the parent function with a note describing the transformations. (due 5/29) One per group.
- 5) A movie file (or link to uploaded youtube or other online service). (due 6/12)
- 6) Each group member must provide a paragraph (or more) (due 6/12) discussing:
  - a) what you liked and disliked about the project
  - b) what problems you encountered and how you overcame them
  - c) what you learned
  - d) amount of time spent by each person .
  - e) any other comments you'd like to share.