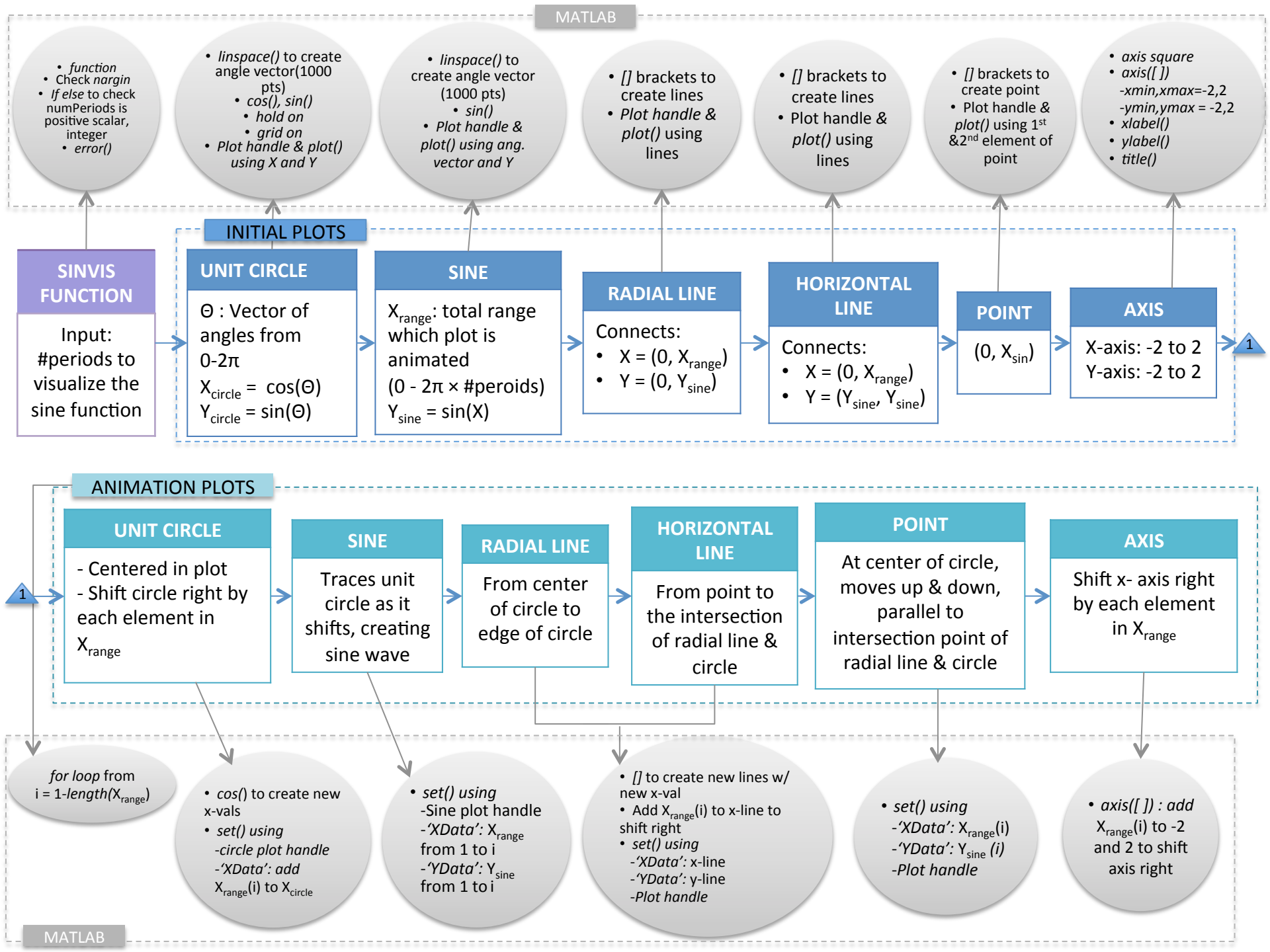
MATLAB
• function
• Check nargin
• If else to check numPeriods is positive scalar, integer
• error()
• linspace() to create angle vector(1000 pts)
• cos(), sin()
• hold on
• grid on
• Plot handle & plot() using X and Y
• linspace() to create angle vector (1000 pts)
• sin()
• Plot handle & plot() using ang. vector and Y
• [] brackets to create lines
• Plot handle & plot() using lines
• [] brackets to create lines
• Plot handle & plot() using lines
• [] brackets to create point
• Plot handle & plot() using 1st &2nd element of point
• axis square
• axis([ ]) -xmin,xmax=-2,2 -ymin,ymax = -2,2
• xlabel()
• ylabel()
• title()
INITIAL PLOTS
SINVIS FUNCTION
Input: #periods to visualize the sine function
UNIT CIRCLE
Θ : Vector of angles from 0-2π
X_{circle} = cos(Θ)
Y_{circle} = sin(Θ)
SINE
X_{range}: total range which plot is animated
(0 - 2π × #peroids)
Y_{sine} = sin(X)
RADIAL LINE
Connects:
• X = (0, X_{range})
• Y = (0, Y_{sine})
HORIZONTAL LINE
Connects:
• X = (0, X_{range})
• Y = (Y_{sine}, Y_{sine})
POINT
(X_{sin})
AXIS
X-axis: -2 to 2
Y-axis: -2 to 2
1
ANIMATION PLOTS
1
UNIT CIRCLE
- Centered in plot
- Shift circle right by each element in X_{range}
SINE
Traces unit circle as it shifts, creating sine wave
RADIAL LINE
From center of circle to edge of circle
HORIZONTAL LINE
From point to the intersection of radial line & circle
POINT
At center of circle, moves up & down, parallel to intersection point of radial line & circle
AXIS
Shift x- axis right by each element in X_{range}
for loop from i = 1-length(X_{range})
• cos() to create new x-vals
• set() using -circle plot handle -'XData': add X_{range}(i) to X_{circle}
• set() using -Sine plot handle -'XData': X_{range} from 1 to i -'YData': Y_{sine} from 1 to i
• [] to create new lines w/ new x-val
• Add X_{range}(i) to x-line to shift right
• set() using -'XData': x-line -'YData': y-line -Plot handle
• set() using -'XData': X_{range}(i) -'YData': Y_{sine} (i) -Plot handle
• axis([ ]) : add X_{range}(i) to -2 and 2 to shift axis right
MATLAB