Subject: Re: cgGallery with function graphics
Posted by Matthew Argall on Sun, 02 Mar 2014 01:38:32 GMT
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Filled Area Plot
http://www.idlcoyote.com/gallery/filled_area_plot.png

```
PRO Filled_Area_Plot_FG, WINDOW=awindow
   compile_opt strictarr

   ; Set up variables for the plot. Normally, these values would be
   ; passed into the program as positional and keyword parameters.
   x = Findgen(101)
   y = 4 * Sin(x * !DtoR) / Exp( (x-15) / 25.)

   ; Set up the low and high x indices of the area under the curve
   ; you want to fill.
   low = 20
   high = 45

   ; Find the y indices associated with the low and high indices.
   lowY  = 4 * Sin(low * !DtoR) / Exp( (low-15) / 25.)
   highY = 4 * Sin(high * !DtoR) / Exp( (high-15) / 25.)
   indices = Value_Locate(x, [low, high])
   lowIndex = indices[0]
   highIndex = indices[1]

   ; Make sure the indices you find correspond the the right X indices.
   IF x[lowIndex] LT low THEN lowIndex = lowIndex + 1
   IF x[highIndex] GT high THEN highIndex = highIndex - 1

   ; Open a window and return its reference to the user.
   aWindow = Window(WINDOW_TITLE="Filled Area Plot")

   ;
   ;APPROACH 1:
   ;   Similar to the Coyote example, create a plot, then fill it with a polygon.
   ;

   ; Draw the plot axes.
   fgPlot = Plot(x, y, /Current, XTitle='X Axis', YTitle='Y Axis', Color='red', $
            Name='4*Sin(x) $\slash$ e^(x-15) $\slash$ 25', LAYOUT=[1,2,1], $
            Title='Example Using Polygon')

   ; Create closed polygons to color fill.
   yMin = fgPlot.yrange[0]
   xpoly = [ low,  low, x[lowIndex:highIndex],  high, high]
   ypoly = [yMin, lowY, y[lowIndex:highIndex], highY, yMin]
```

```
    ; Create a filled polygon and keep it in the data space.
    fgPoly = Polygon(xpoly, ypoly, /Data, Target=fgPlot, /Fill_Background, $
                  Fill_Color='Dodger Blue', Name='Area Under Plot')

    ; Bring the plot to the front
    fgPlot -> Order, /Bring_Forward

    ;
    ;APPROACH 2:
    ;   Using the FILL_* keywords in the Plot function. This does not reproduce the
    ;   Coyote example, but it illustrates another manner of filling the area under
    ;   the plot with a polygon. Adjust Fill_Level to see what happens.
    ;
    ;   It would be nice if there were Fill_XRange and Fill_YRange keywords.
    ;

    ; Draw the plot axes and fill the area below it.
    fgPlot = Plot(x, y, /Current, XTitle='X Axis', YTitle='Y Axis', Color='red', $
                Name='4*Sin(x) $\slash$ e^(x-15) $\slash$ 25', $
                /Fill_Background, Fill_Color='Dodger Blue', Fill_Level=0.3, $
                Layout=[1,2,2], Title='Example using Fill_* Keywords (Fill_Level=0.3)')

END  ;****************************************************** ******

; This main program shows how to call the program and produce
; various types of output.

  ; Display the plot in a  resizeable graphics window.
  Fill_Area_Plot_FG, Window=window

  ; Create a PostScript file. Linestyles are not preserved in IDL 8.2.3 due
  ; to a bug. Only encapsulated PostScript files can be created.
  window.save, 'filled_area_plot_fg.eps'

  ; Create a PNG file with a width of 600 pixels. Resolution of this
  ; PNG file is not very good.
  window.save, 'filled_area_plot_fg.png', WIDTH=600

  ; For better resolution PNG files, make the PNG full-size, then resize it
  ; with ImageMagick. Requires ImageMagick to be installed.
  window.save, 'filled_area_plot_fg_fullsize.png'
  Spawn, 'convert filled_area_plot_fg_fullsize.png -resize 600 filled_area_plot_fg_resized.png'

END
```