CS 557
Project # 2
Due Tuesday, 27 September 2016

Add the following commands to CPLOT:

CCURvature
ncurve, n
For curve \( P \) that has curve number \( ncurve \), draw a line from point \( P(t) \) to its center of curvature (which is the center of the osculating circle) for the \( n + 1 \) parameter values
\[
t = \frac{i}{n}, \quad i = 0, \ldots, n.
\]

CURVature
ncurve, t
For curve \( P \) that has curve number \( ncurve \), print the value of the curvature next to the point \( P(t) \).

COMB
ncurve
Draw a curvature comb for curve number \( ncurve \) (see Section 2.10).
Use about 100 line segments. Scale the comb length so that most or all of the comb is visible. To do this, find the maximum curvature along the curve by sampling the curvature at the 100 points. Then assign the maximum length for the line segments to be, say, .2 times the width of the current window.

EXPLICIT
ncurve, n
\( f_0, f_1, \ldots, f_n \)
Store in curve \( ncurve \) a degree-\( n \) explicit Bézier curve that is equivalent to the polynomial
\[
x = t
y = f_0 + f_1 t + f_2 t^2 + \ldots + f_n t^n.
\]

OFFSet
ncurve, radius
Plot the offset of the specified rational Bézier curve. For a positive radius, the offset should be on the left side of the tangent vector.

Run your program on the data files proj2a.dat and proj2b.dat. Email your source code and pdf files of the output of the data files to tom@cs.byu.edu by 11:59p on 27 September.