B-SPLINE "CURVATURE RULES"

$$B_i(u) = \sum_{k=-1}^{2} b_k p_{i+k}, \quad \text{where}$$

$$b_{-1} = \frac{(1-u)^3}{6},$$

$$b_0 = \frac{u^3}{2} - u^2 + \frac{2}{3},$$

$$b_1 = -\frac{u^3}{2} + \frac{u^2}{2} + \frac{u}{2} + \frac{1}{6},$$

$$b_2 = \frac{u^3}{6}, \qquad 0 \le u \le 1.$$

$$x_i(u) = \frac{1}{6}(1-u)^3 x_{i-1} + \frac{1}{6}(3u^3 - 6u^2 + 4)x_i$$

$$+ \frac{1}{6}(-3u^3 + 3u^2 + 3u + 1)x_{i+1} + \frac{1}{6}u^3 x_{i+2};$$

$$y_i(u) = \frac{1}{6}(1-u)^3 y_{i-1} + \frac{1}{6}(3u^3 - 6u^2 + 4)y_i$$

$$+ \frac{1}{6}(-3u^3 + 3u^2 + 3u + 1)y_{i+1} + \frac{1}{6}u^3 y_{i+2}.$$

$P_0 = (x_0, y_0)$