Bezier 곡선

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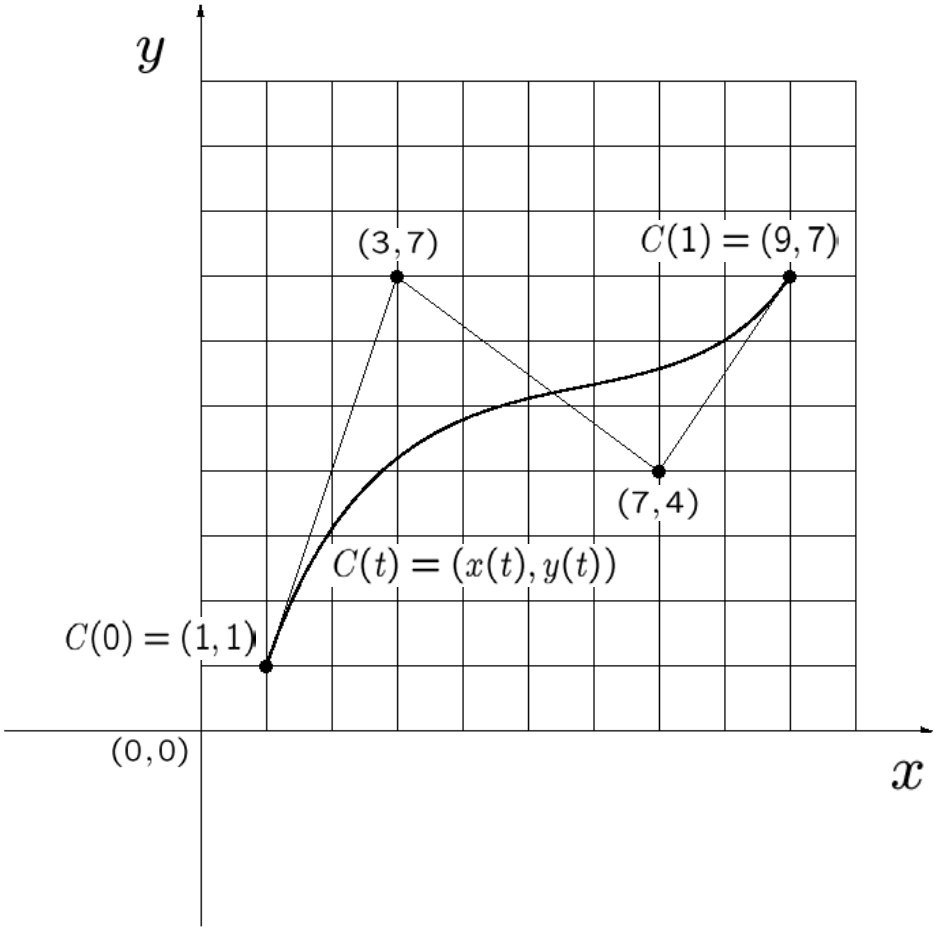
http://cse.snu.ac.kr/mskim
http://3map.snu.ac.kr

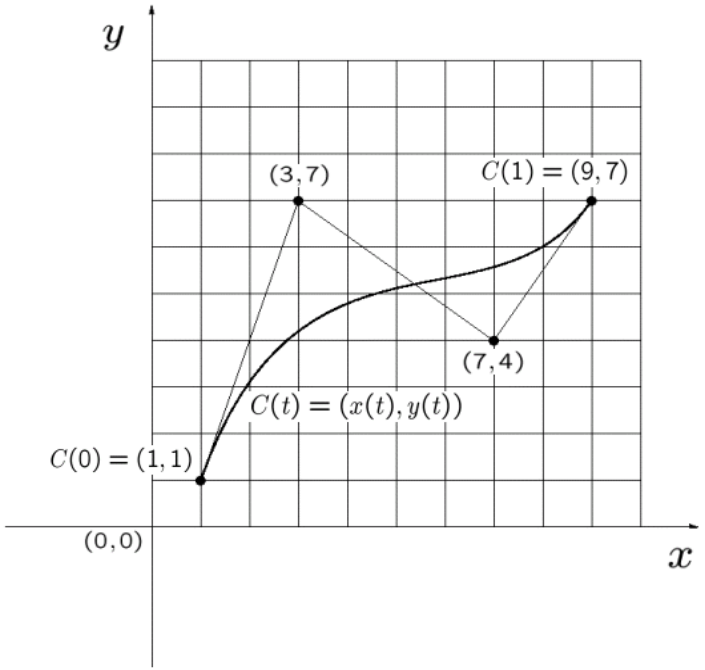
곡선의 표현



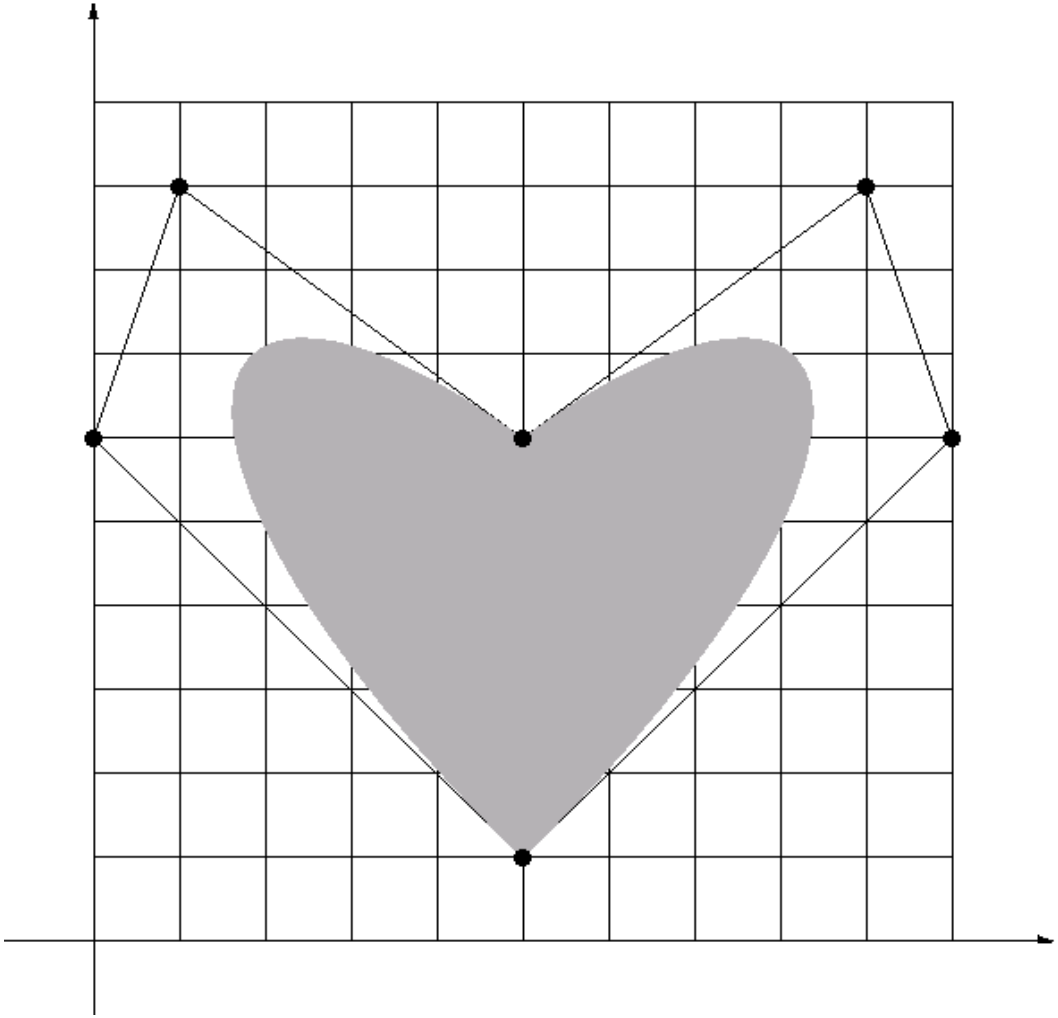
PostScript 곡선

1 1 moveto

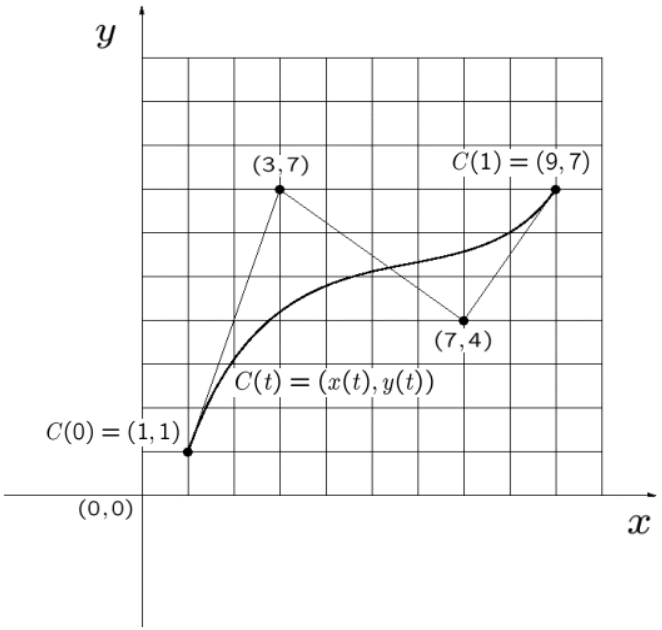
3 7 7 4 9 7 curveto

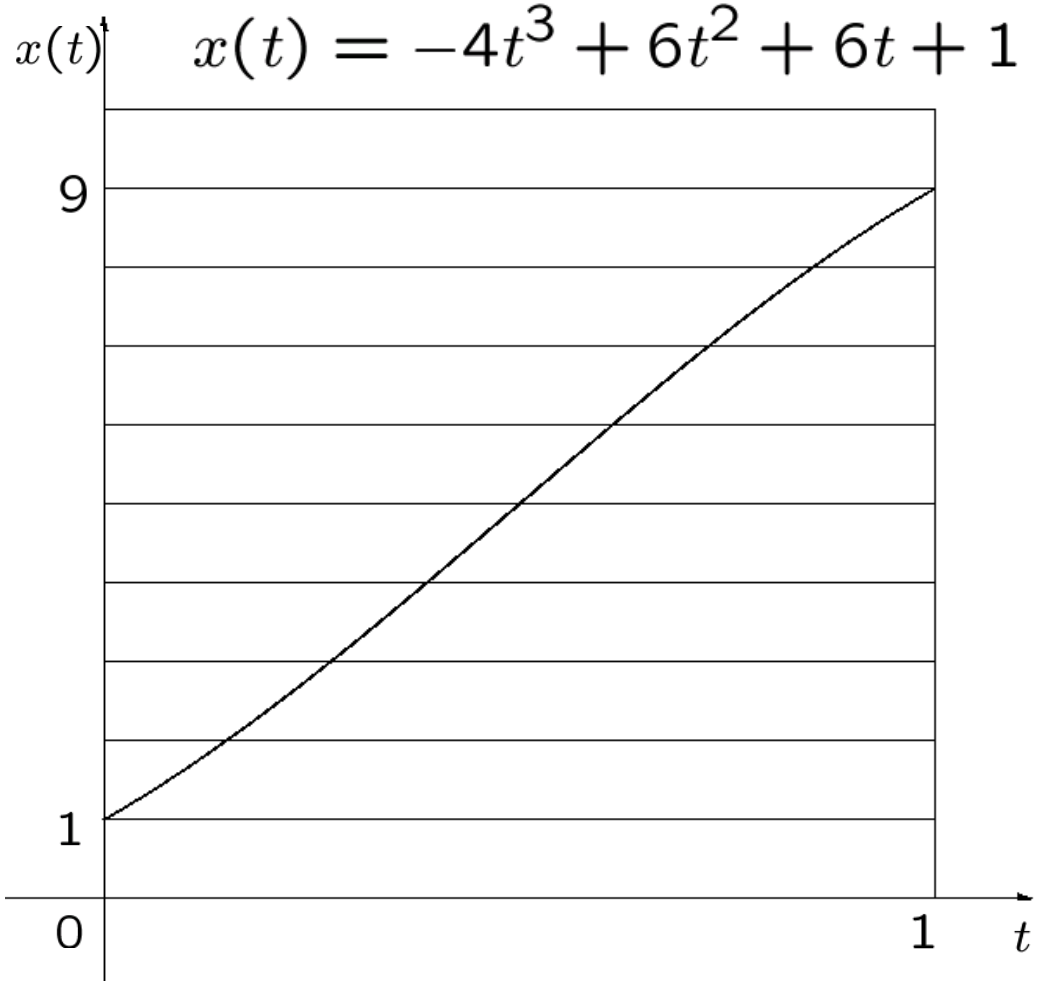


곡선을 이용한 도형디자인

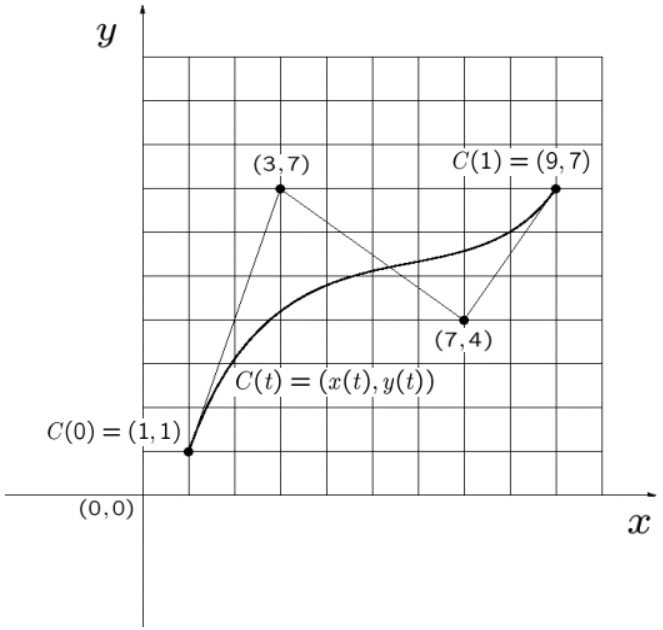


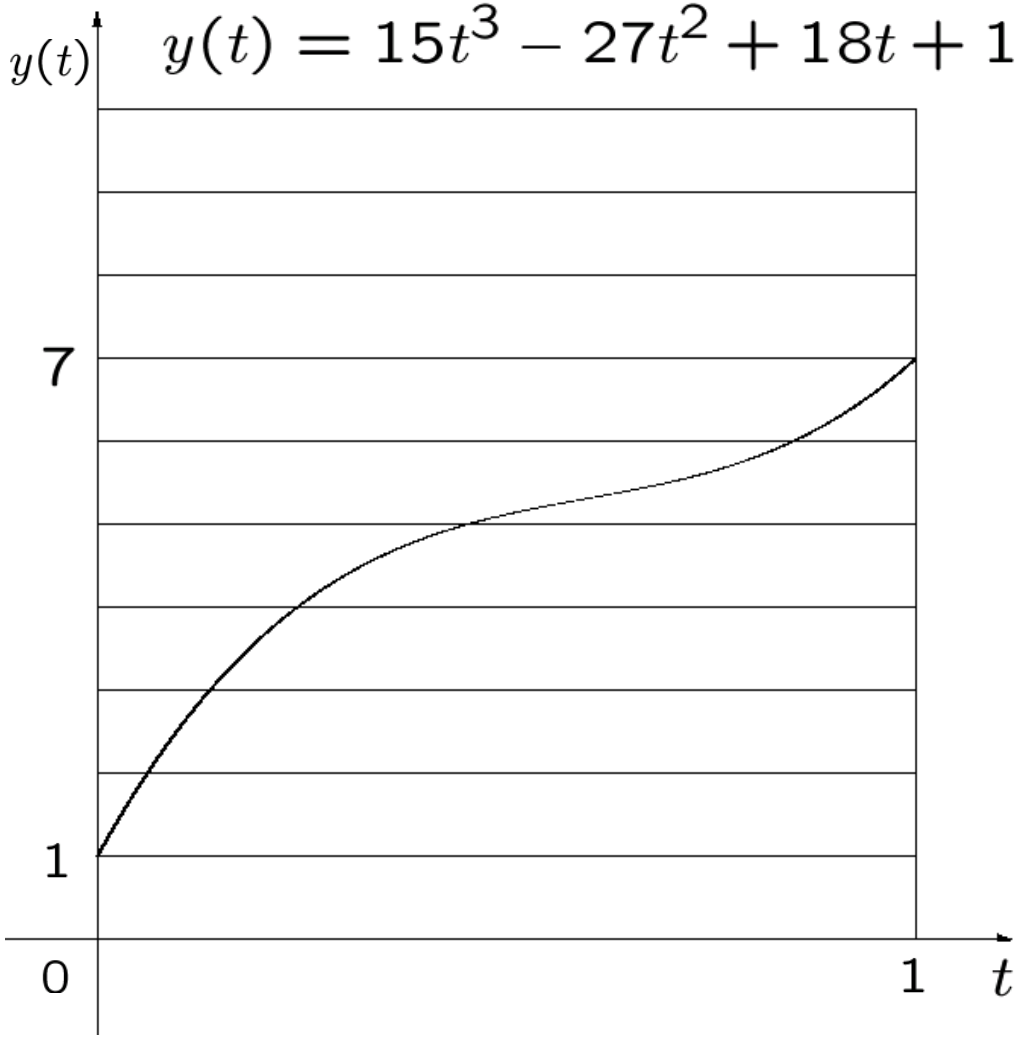
곡선의 X-좌표함수



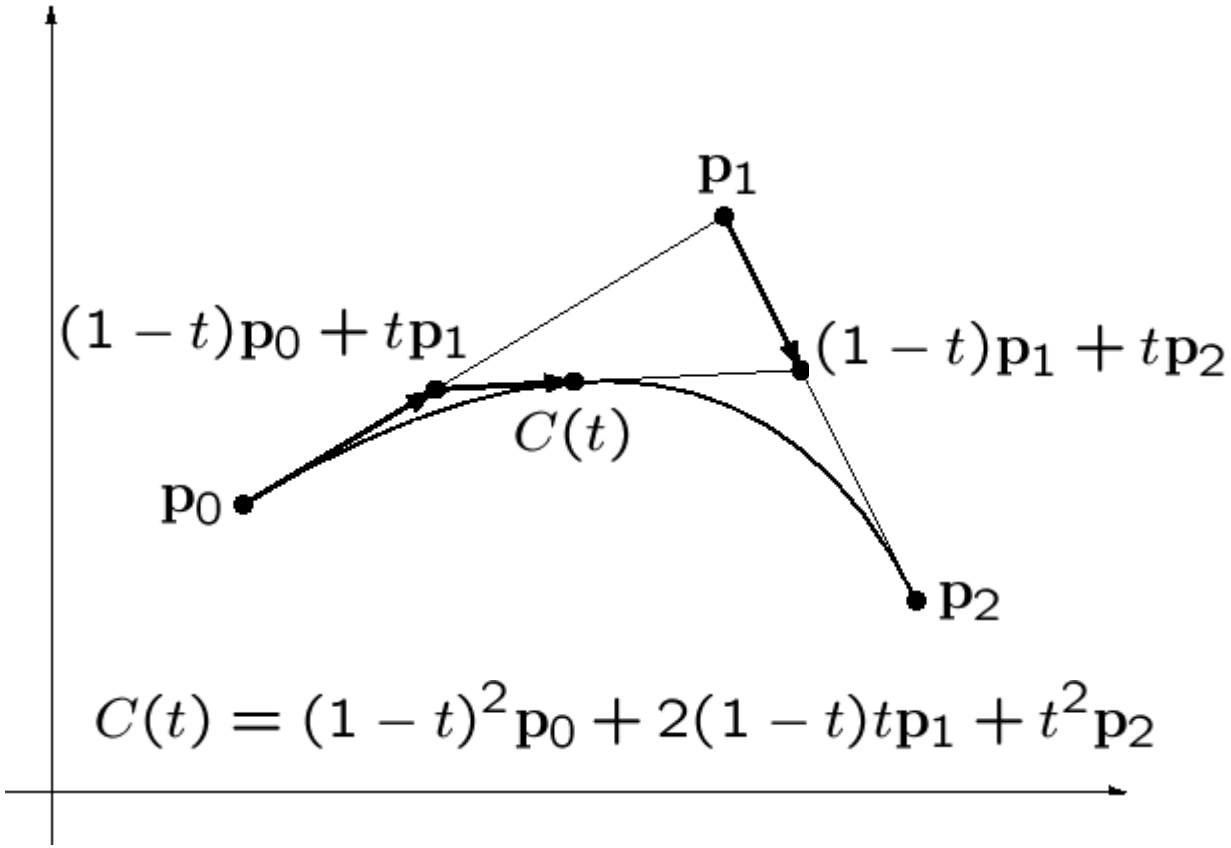


곡선의 y-좌표함수





Bezier 2차 곡선의 정의



Bezier 3차 곡선의 정의

$$
\begin{aligned}
C(t) &= (1-t)^3\,\mathbf{p}_0 + 3(1-t)^2 t\,\mathbf{p}_1 \\
&\quad +3(1-t)t^2\,\mathbf{p}_2 + t^3\,\mathbf{p}_3 \\
x(t) &= (1-t)^3 + 9(1-t)^2 t \\
&\quad +21(1-t)t^2 + 9t^3 \\
&= -4t^3 + 6t^2 + 6t + 1 \\
y(t) &= (1-t)^3 + 21(1-t)^2 t \\
&\quad +12(1-t)t^2 + 7t^3 \\
&= 15t^3 - 27t^2 + 18t + 1
\end{aligned}
$$