FIND THE NATURAL CUBIC SPLINE SATISFYING

$S(0) = 0$

$S(1/2) = 1$

$S(1) = 0$

$$S_0 = \frac{1}{8}\left(x - \frac{1}{2}\right)^3 + 1$$

$$S_1 \overset{?}{=} -a_1\left(x - \frac{1}{2}\right)^3 + 1$$

$S_0(1/2) = S_1(1/2)$

$S_0'(1/2) = S_1'(1/2)$

$S_0(0) = 0$

$S_0(1/2) = 1$