syms n a x

assume(n, 'integer')

f=x^2;

L=1/3;

ao=int(f,x,0,1)/L

an=int(f\*cos(n\*pi\*x/L),x,0,1)/L;

an=subs(an,[cos(n\*pi),sin(pi\*n),cos(2\*n\*pi),sin(2\*pi\*n),cos(3\*n\*pi),sin(3\*pi\*n)],[(-1)^n,0,1,0,(-1)^n,0])

bn=int(f\*sin(n\*pi\*x/L),x,0,1)/L;

bn=subs(bn,[cos(n\*pi),sin(pi\*n),cos(2\*n\*pi),sin(2\*pi\*n),cos(3\*n\*pi),sin(3\*pi\*n)],[(-1)^n,0,1,0,(-1)^n,0])