```matlab
% chap7_inverse_z_transform_long_division.m
% Chapter 7 Inverse z-Transform by long division example
% for H(z) = (z^2+2z+1)/(z^2-z+1)
clc; clear; close all;
num=[1, 2, 1];           % Input coefficients of numerator polynomial
den=[1, -1, 1];          % Input coefficients of denominator polynomial
h=dimpulse(num,den,12); % Calculate first 12 values of h[n]
n=0 : 1 : length(h)-1;
stem(n,h,'r.','linewidth',1.5,'markersize',18),axis([-0.9 11.9 -4 4]),
ylabel('{\ith}[{\itn}]','fontsize',16,'fontname','times'),
xlabel('{\itn}','fontsize',16,'fontname','times'),
title({'Inverse z-Transform by long division';...
    '{\itH}({\itz}) = ({\itz}^2+2{\itz}+1)/({\itz}^2-{\itz} + 1)'},...
    'fontsize',16,'fontname','times'),
for m=1:length(h),
    if(h(m)<0),
        text(n(m),h(m)-0.12,[num2str(h(m),2)],...
            'horizontalalignment','center','verticalalignment','top')
    else
        text(n(m),h(m)+0.05,[num2str(h(m),2)],...
            'horizontalalignment','center','verticalalignment','bottom')
    end
end
set(findobj('type','line'),'linewidth',1.5,'markersize',18)
set(findobj('type','axes'),'linewidth',2,'fontsize',12,'fontname','times')
set(findobj('type','text'),'fontsize',12,'fontname','times')
```


Inverse z-Transform by long division
$H(z) = (z^2+2z+1)/(z^2 - z + 1)$