Live Editor demo

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Note: Upload your mlx-file **and** the pdf-file in blackboard!

```
% Initialisation
clear all;  close all;

Fs  = 128;          % Sampling frequency
Ts  = 1/Fs;         % Sampling period
L   = Fs;           % Length of signal
t   = (0:L-1)*Ts;   % Time vector
```

```
DC      =20
```

```
DC = 20
```

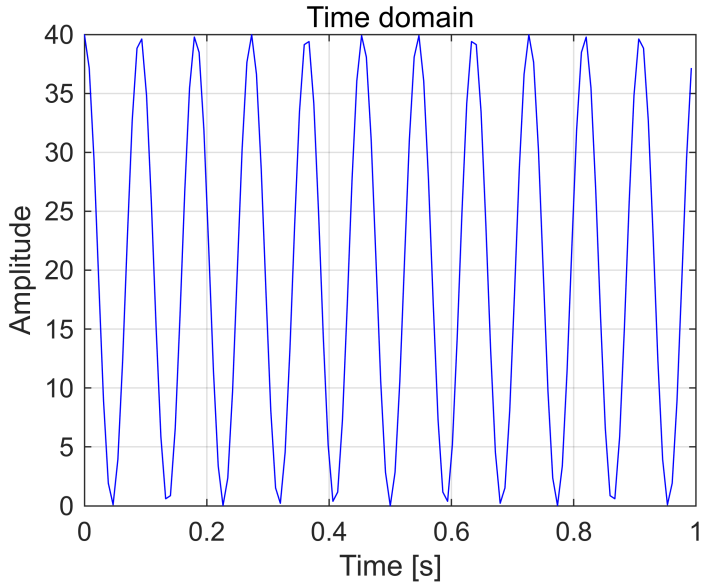
```
Ampl    =20
```

```
Ampl = 20
```

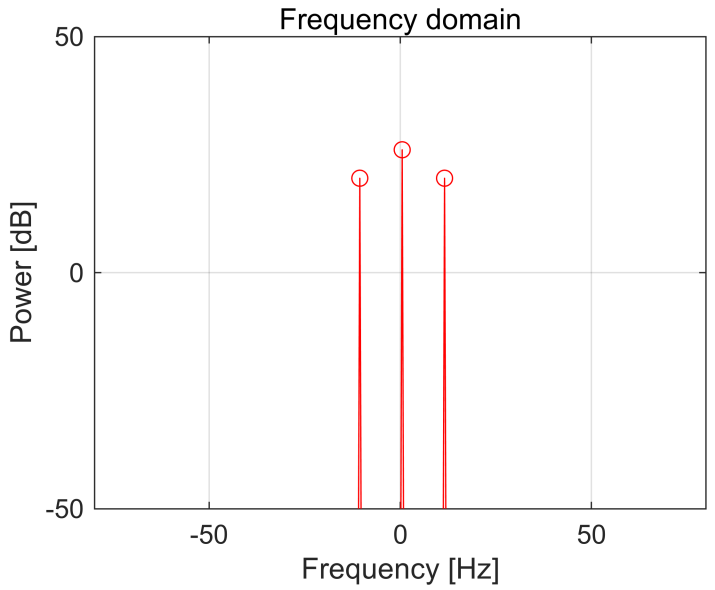
```
Freq    =12.25
```

```
Freq = 11
```

```

% time domain
s = DC + Ampl * cos( 2 * pi * Freq * t );
plot( t, s, 'b-' );
grid on; zoom on;
xlabel('Time [s]');
ylabel ('Amplitude');
title('Time domain');
```




```
% spectral domain
Y   = fftshift( fft( s ) ) / L;
Y   = max( -200, Ampl2dB( Y ) );
fr_ax   = linspace(-Fs/2,Fs/2,length(Y));
plot(fr_ax, Y, '-ro' );
ax = axis;   ax(3) = -50;   axis( ax );
grid on; zoom on;
xlabel('Frequency [Hz]');
ylabel('Power [dB]');
title('Frequency domain');
```




```
function dB = Ampl2dB( a )
% This function converts an Amplitude (e.g. Volts)
% into 'deciBells'. But, deciBells are defined on Power.
```

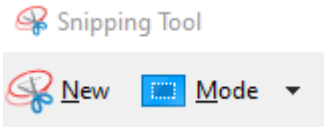
```
% [Power] is [Amplitude]^2
% dB = 10 * log10( Power )      <--- definition
%    = 10 * log10( Amplitude^2 )
%    = 20 * log10( Amplitude )

    dB = 20*log10( abs(a) );
end
```

Also additional info as url's etc can be placed outside the code blocks:

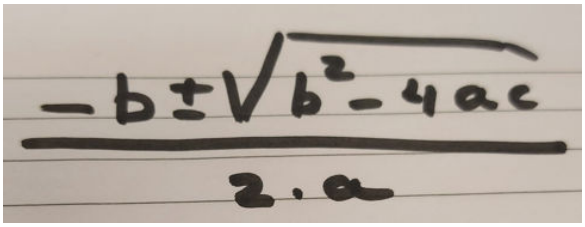
Wikipedia :: Quadratic_formula

Insert images or other useful additional information into your LiveEditor-file.

You can snap&paste images with the 'SnippingTool' under Windows.



Example: (paste your paperwork into a LiveScript)



Example (if you like LaTeX):

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

```
function x = abc( a, b, c )
% Calculate the zero crossings of a quadratic function.
% And yes, I know ... I don't check on division by 0
    D   = sqrt( b.*b - 4 .* a .* c )
    x1  = (-b - D ) / ( 2 * a );
    x2  = (-b + D ) / ( 2 * a );
    x = [ x1 x2 ];
end
```