```matlab
% Exercise 2 - Joshua Obljubek-Thomas - 400506256 - obljubej
clear all; close all %#ok<CLALL> reset everything

% phase velocity
c = 299792458;          % speed of light
eps_r = 2.0;            % relative permittivity
vp = c / sqrt(eps_r);   % phase velocity
f = 5*10^7;             % wave frequency
w = 2*pi*f;             % wave angular frequency
lambda = vp/f;          % lambda
T = 1/f;                % period
A = 5;                  % amplitude

% spatial and temporal axes
z = linspace(-3*lambda, 3*lambda, 1001);
t = linspace(-3*T, 3*T, 3001);

% function of a sinusoid
h = @(tau) A * cos(w*tau);
wave = @(z, ti) h(ti - z / vp);

% plot specification
subplot(3, 1, 1)                                % 3x1 grid, 1st plot
line1 = animatedline('Color', 'red');           % line in the plot
title("Sinusoid travelling in +z direction")    % title
xlabel("z [m]"); ylabel("amplitude")            % axis labels
xlim(z([1 end])); ylim([-A A])                  % axis limits

subplot(3, 1, 2)                                % 3x1 grid, 2nd plot
line2 = animatedline('Color', 'blue');          % line in the plot
title("Sinusoid travelling in -z direction")    % title
xlabel("z [m]"); ylabel("amplitude")            % axis labels
xlim(z([1 end])); ylim([-A A])                  % axis limits

subplot(3, 1, 3)                                % 3x1 grid, 3rd plot
line3 = animatedline('Color', 'magenta');       % line in the plot
title("Superposion of the preceding two waves") % title
xlabel("z [m]"); ylabel("amplitude")            % axis labels
xlim(z([1 end])); ylim([-2*A 2*A])              % axis limits

% animation instructions
for ti = t
    clearpoints(line1)
    clearpoints(line2)
    clearpoints(line3)
    addpoints(line1, z, wave(+z, ti))
    addpoints(line2, z, wave(-z, ti))
    addpoints(line3, z, wave(+z, ti) + wave(-z, ti))
    drawnow limitrate
end
```
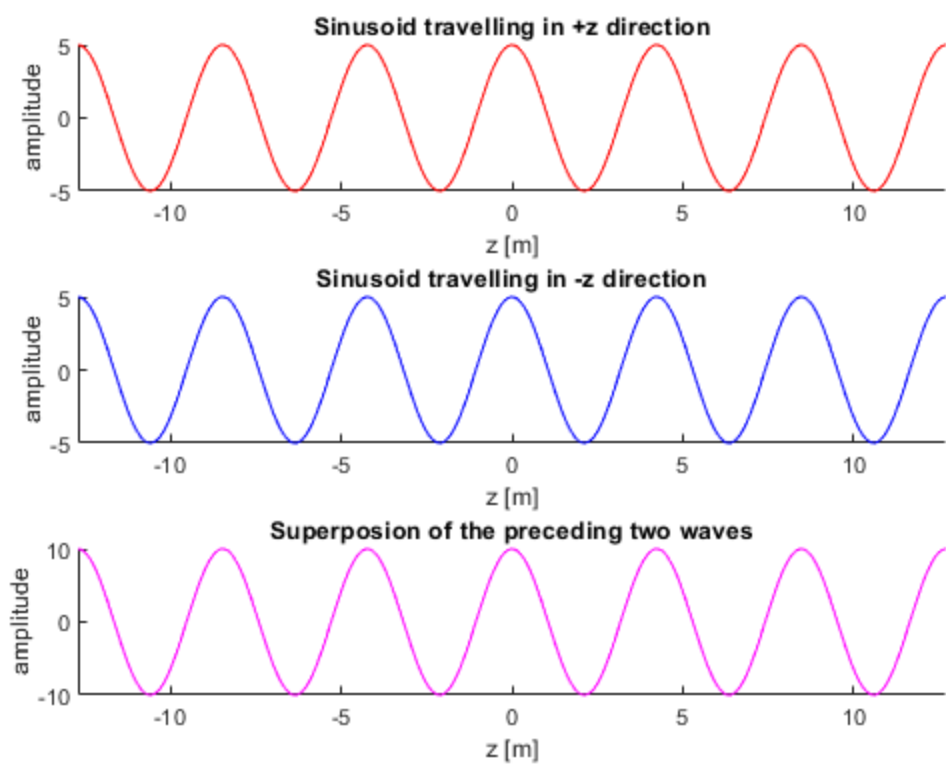
Sinusoid travelling in +z direction

Sinusoid travelling in -z direction

Superposion of the preceding two waves

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