Function that's used to plot results from linearized model for an airplane

This function takes in the time and results vectors from the ode45 function, as well as a title for plots and a letter that indicates what part of the problem is being plotted.

```
function [] = plutter(time, results, titlestring)
```

Extract the results from the results vector

```
    global E1
    Deltau = results(:,1);
    Deltaw = results(:,2);
    Deltaq = results(:,3);
    Deltatheta = results(:,4);
    DeltaX = results(:,5);
    DeltaZ = results(:,6);
```

Create the figure for inertial position (only plotting Z and X components, as Y remains unchanged.

```
    figure();
    hold on
    plot(DeltaX, DeltaZ);
    %plot(linspace(0,max(DeltaX),length(DeltaX)), linspace(E1.Altitude,E1.Altitude,length(Delta
    xlabel('X Position [m]');
    ylabel('Y Position [m]');
    zlabel('Z Position [m]');
    ti1 = title(['Inertial Position for ', titlestring]);
    set(ti1, 'Interpreter','latex');
    set(ti1, 'FontSize', 12);
%     legend('Inertial Position','Initial Altitude','Location','best');
    grid on
    hold off
```

Create a new figure using a tiled layout to plot the responses of the four states, and title it.

```
    figure();
    tiles = tiledlayout(4,1);
    ti2 = title(tiles, ['Responses for ', titlestring]);
    set(ti2, 'Interpreter', 'latex');
    set(ti2, 'FontSize', 20);

    % Tile 1, Delta u Response
    nexttile;
    plot(time, Deltau);
    ylabel('m/s');
    plot1title = title('$\Delta u, \frac{m}{s}$');
    set(plot1title, 'Interpreter', 'latex');
    set(plot1title, 'FontSize', 20);
    grid on

    nexttile;
    plot(time, Deltaw);
    ylabel('m/s');
```

```
    plot1title = title('$\Delta w, \frac{m}{s}$');
    set(plot1title, 'Interpreter', 'latex');
    set(plot1title, 'FontSize', 20);
    grid on

    nexttile;
    plot(time, Deltaq);
    ylabel('rad/s');
    plot1title = title('$\Delta q, \frac{rad}{s}$');
    set(plot1title, 'Interpreter', 'latex');
    set(plot1title, 'FontSize', 20);
    grid on

    nexttile;
    plot(time, Deltatheta);
    ylabel('rad/s');
    plot1title = title('$\Delta \theta, \frac{rad}{s}$');
    set(plot1title, 'Interpreter', 'latex');
    set(plot1title, 'FontSize', 20);
    grid on

    xlabel(tiles,'Time, [s]');

end
```