EEN 307 Homework #5

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Assignment: Create GUI files for laplace transform and inverse laplace transform using MATLAB.

1) Matlab code:

Variables

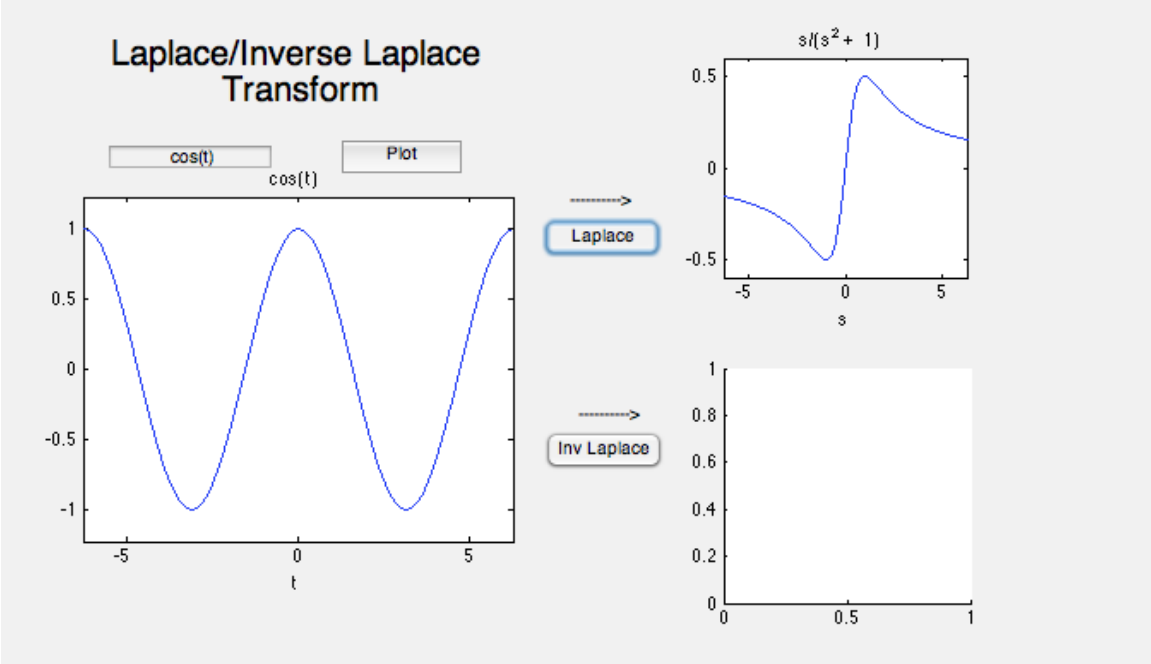
Signal1 = User's inputted equation
Plot1 = The plot of the input equation
Plot2 = The plot of the laplace transform
Plot3 = The plot of the inverse laplace transform

```
function varargout = HW5(varargin)
% HW5 MATLAB code for HW5.fig
%      HW5, by itself, creates a new HW5 or raises the existing
%      singleton*.
%
%      H = HW5 returns the handle to a new HW5 or the handle to
%      the existing singleton*.
%
%      HW5('CALLBACK',hObject,eventData,handles,...) calls the local
%      function named CALLBACK in HW5.M with the given input arguments.
%
%      HW5('Property','Value',...) creates a new HW5 or raises the
%      existing singleton*.  Starting from the left, property value
pairs are
%      applied to the GUI before HW5_OpeningFcn gets called.  An
%      unrecognized property name or invalid value makes property
application
%      stop.  All inputs are passed to HW5_OpeningFcn via varargin.
%
%      *See GUI Options on GUIDE's Tools menu.  Choose "GUI allows only
one
%      instance to run (singleton)".
%
% See also: GUIDE, GUIDATA, GUIHANDLES

% Edit the above text to modify the response to help HW5

% Last Modified by GUIDE v2.5 12-Nov-2014 23:53:48

% Begin initialization code - DO NOT EDIT
```

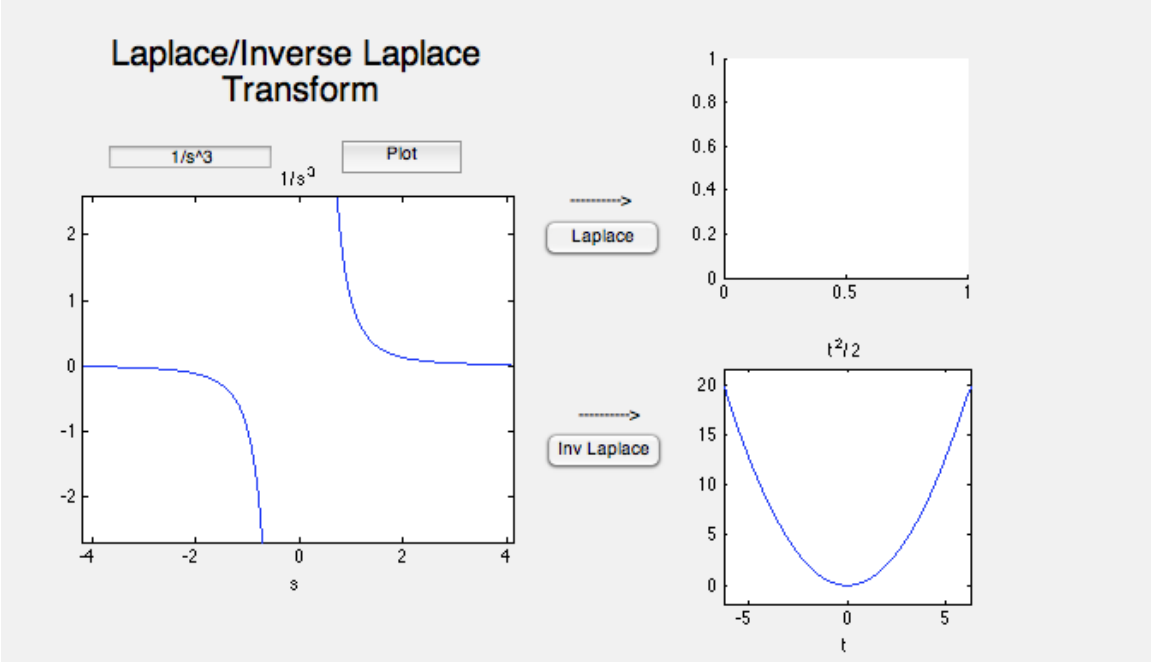
```
gui_Singleton = 1;
gui_State = struct('gui_Name',       mfilename, ...
                   'gui_Singleton',  gui_Singleton, ...
                   'gui_OpeningFcn', @HW5_OpeningFcn, ...
                   'gui_OutputFcn',  @HW5_OutputFcn, ...
                   'gui_LayoutFcn',  [] , ...
                   'gui_Callback',   []);
if nargin && ischar(varargin{1})
    gui_State.gui_Callback = str2func(varargin{1});
end

if nargout
    [varargout{1:nargout}] = gui_mainfcn(gui_State, varargin{:});
else
    gui_mainfcn(gui_State, varargin{:});
end
% End initialization code - DO NOT EDIT


% --- Executes just before HW5 is made visible.
function HW5_OpeningFcn(hObject, eventdata, handles, varargin)
% This function has no output args, see OutputFcn.
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
% varargin   command line arguments to HW5 (see VARARGIN)

% Choose default command line output for HW5
handles.output = hObject;

% Update handles structure
guidata(hObject, handles);

% UIWAIT makes HW5 wait for user response (see UIRESUME)
% uiwait(handles.figure1);


% --- Outputs from this function are returned to the command line.
function varargout = HW5_OutputFcn(hObject, eventdata, handles)
% varargout  cell array for returning output args (see VARARGOUT);
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Get default command line output from handles structure
varargout{1} = handles.output;



function Signal1_Callback(hObject, eventdata, handles)
% hObject    handle to Signal1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
```

```
% Hints: get(hObject,'String') returns contents of Signal1 as text
%        str2double(get(hObject,'String')) returns contents of Signal1
as a double
handles.Signal1=sym(get(hObject,'String'));
guidata(hObject,handles);


% --- Executes during object creation, after setting all properties.
function Signal1_CreateFcn(hObject, eventdata, handles)
% hObject    handle to Signal1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns
called

% Hint: edit controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

% --- Executes on button press in Plot_Signal1.
function Plot_Signal1_Callback(hObject, eventdata, handles)
% hObject    handle to Plot_Signal1 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
axes(handles.Plot1)
cla(handles.Plot1)
ezplot(handles.Signal1)



% --- Executes on button press in Laplace_Transform.
function Laplace_Transform_Callback(hObject, eventdata, handles)
% hObject    handle to Laplace_Transform (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
axes(handles.Plot2)
cla(handles.Plot2)
ezplot(laplace(handles.Signal1))


% --- Executes on button press in Inverse_Laplace_Transform.
function Inverse_Laplace_Transform_Callback(hObject, eventdata,
handles)
% hObject    handle to Inverse_Laplace_Transform (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
axes(handles.Plot3)
cla(handles.Plot3)
ezplot(ilaplace(handles.Signal1))
```

2) Pictures



Laplace Transform



Inverse Laplace Transform