script, or from another function

```
>> x = [1 2 3 4 5 6]; arithmeticMean(x);
The arithmetic mean is: 3.5
```

10. Display graphically the function $f(t) = \sin(2\pi 0.3t)$ with blue plus-dash line and the function $g(t) = 1 - f(t)$ with red dash-asterisk line. Label the x-axis with `Time` and the y-axis with `Amplitude`; the title of the plot should be `f(t) = sin(2π0.3t) and g(t) = 1 - f(t)`. Use `plot` in the subfigure 1, and `stem` in the subfigure 2 (Fig. 1.1). Put also the legend in each subwindow [7].
A script file called `fgPlot.m` can be written as:

```
% plot two functions, label axes, add title
t = 0:0.1:5; f = sin(2*pi*0.3*t);  g = 1-f;
figure(1); subplot(211); plot(t, f, '-+b', 'LineWidth',1.5);
hold on                  plot(t, g, '-*r', 'LineWidth', 2);
hold off; grid; xlabel('Time'); ylabel('Amplitude');
legend('boxon'); l1 = legend('f(t)', 'g(t)', 2);
title('f(t) = sin(2\pi0.2t) and g(t) = 1-f(t)');
subplot(212); stem(t, f, 'ob', 'LineWidth',1.5);
hold on       stem(t, g, '^r', 'LineWidth', 2);
hold off; grid; xlabel('Time'); ylabel('Amplitude');
legend('boxoff'); l2 = legend('f(t)', 'g(t)', 1);
```

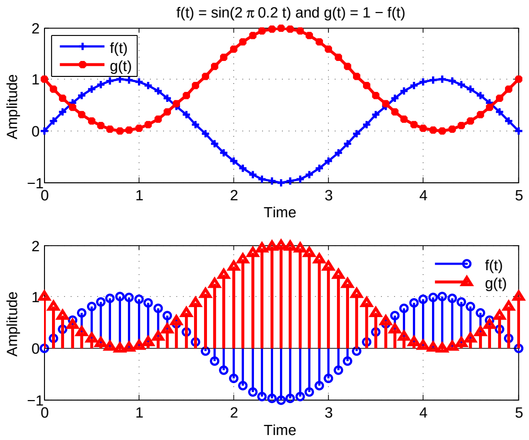

Figure 1.1: Graphics for $f(t)$ and $g(t)$

1.3 Exercises

1. Generate a linearly spaced vector between 3 and 9 with increment 2.
2. Generate a 13 element linearly spaced vector between 3 and 9.

3. Generate a 9 point logarithmically spaced vector between decades 10^{-3} and 10^3.

4. `y = 3:0.9:123` is the given vector. Find the length of the vector and generate another vector of the same length, with only 1s elements.

5. Consider the matrices $\mathbf{A} = \begin{bmatrix} 3 & 2 & 1 \\ 8 & 4 & 5 \\ 0 & 2 & 0 \end{bmatrix}$ and $\mathbf{B} = \begin{bmatrix} 2 & 3 & 4 \\ 1 & 1 & 1 \\ 2 & 3 & 2 \end{bmatrix}$, and the scalar $m = 4$. Evaluate using MATLAB:

   - $\mathbf{C} = \mathbf{A} + \mathbf{B}$;
   - $\mathbf{D} = \mathbf{A} - \mathbf{B}$;
   - $\mathbf{E} = \mathbf{C} + m$;
   - $\mathbf{F} = \mathbf{A} \cdot \mathbf{B}$;
   - $\mathbf{G} = \mathbf{B} \cdot m$;
   - $\mathbf{H} = \mathbf{A}^T$;
   - $\mathbf{I} = \mathbf{B}^T$;
   - $\mathbf{J} = \mathbf{A}/\mathbf{B}$;
   - $\mathbf{K} = \mathbf{A} \setminus \mathbf{B}$;
   - $\mathbf{L} = \mathbf{C}^m$.

   Verify if $\mathbf{J} = \mathbf{A} \cdot \mathbf{B}^{-1}$ and if $\mathbf{K} = \mathbf{A}^{-1} \cdot \mathbf{B}$. Use the `long e` format.

6. Evaluate the scalar product for the vectors: $\mathbf{a} = \begin{bmatrix} 1 & 2 \end{bmatrix}$, $\mathbf{b} = \begin{bmatrix} -3 & 3 \end{bmatrix}$.

7. For the matrices $\mathbf{A} = \begin{bmatrix} 9 & 8 & 7 \\ 6 & 5 & 4 \\ 3 & 2 & 1 \end{bmatrix}$ and $\mathbf{B} = \begin{bmatrix} 1 & 0 & 1 \\ 1 & 0 & 1 \\ 1 & 0 & 1 \end{bmatrix}$ evaluate the element by element product.

8. Graph $x(n) = \sin\left(2\pi \frac{1}{5} n\right)$, $n = \overline{0, 10}$, using `stem` command. The graph should be represented by red stars; label the axes and write a title.

9. In order to evaluate the sum of two variables `a` and `b`, write a MATLAB function named `bplusa.m`:

```
function sumab = bplusa(a, b);
```

10. In order to evaluate the product of two vectors `a` and `b`, generate a function named `bproducta.m`:

```
function prodab = bproducta(a, b);
```

11. Write a MATLAB function named `geomMean.m`, in order to evaluate the geometric mean of two scalars `a` and `b`:

```
function geometricmean = geomMean(a, b);
```