The task given:

Problem 1: Continuous-Time Signals and Systems

Consider a continuous-time signal $x(t) = 3\cos(2\pi t) + 2\sin(4\pi t)$.

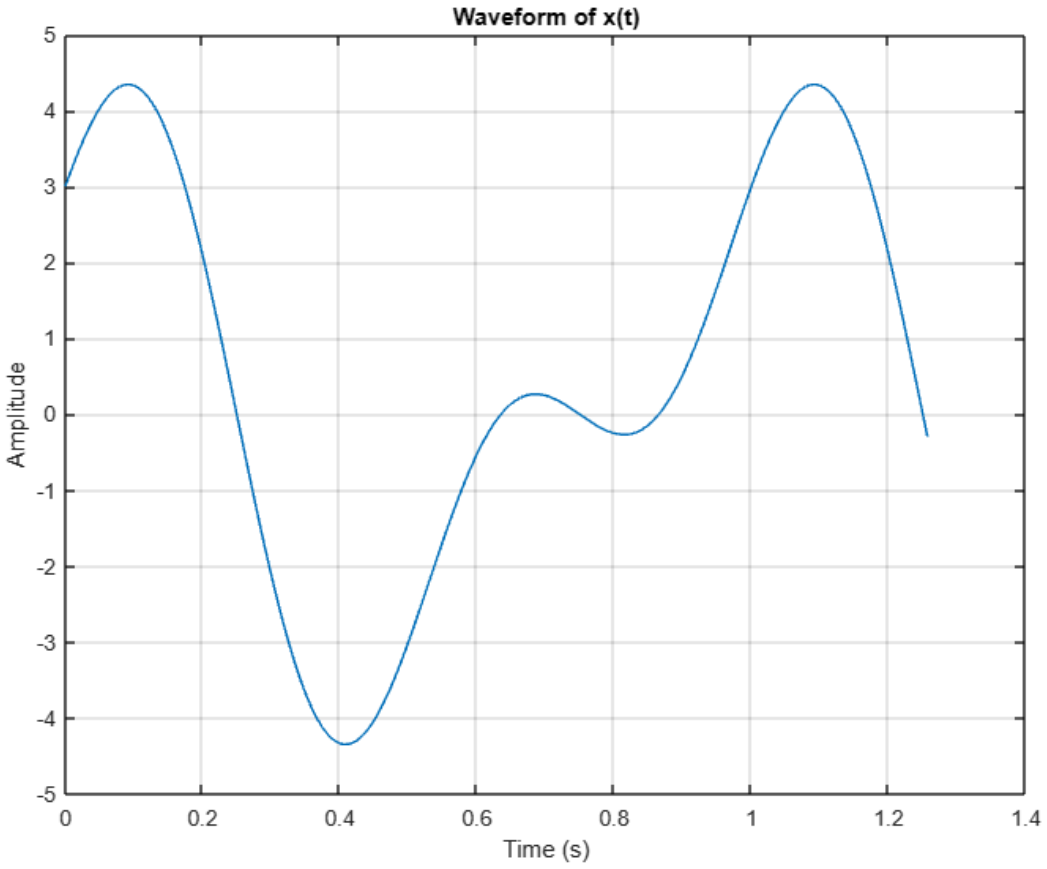
1. Sketch the waveform of $x(t)$ over one period.

My code:

```
% Problem 1:
xt = 3 * cos(2 * pi * tVector) + 2 * sin(4 * pi * tVector); % Continuous-Time Signal x(t)
tVector = linspace(0, 0.4*pi, 1000); % Time Vector

% Task 1:
figure;
plot(tVector, xt);
title('Waveform of x(t)');
xlabel('Time (s)');
ylabel('Amplitude');
grid on;
```

The output:



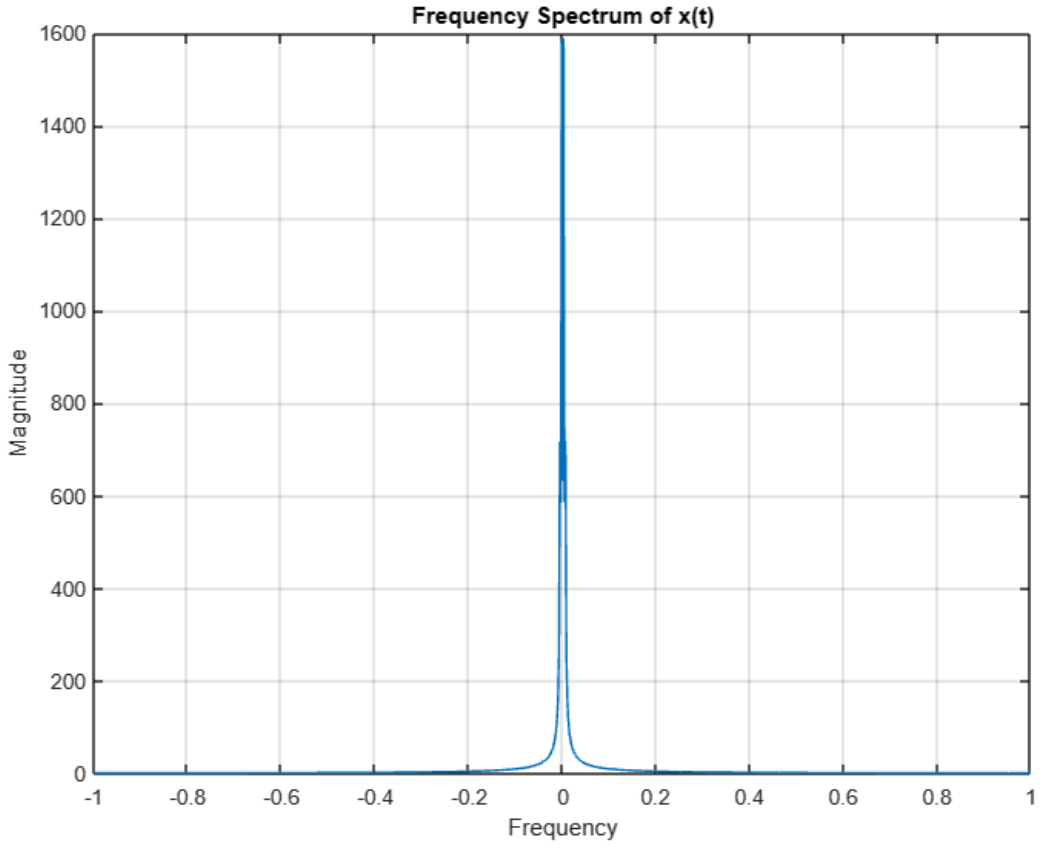
The task given:

2. Determine the frequency components present in $x(t)$.

My code:

```
% Task 2:
figure;
fftResult = fft(xt);
frequencies = linspace(-1, 1, length(fftResult));
plot(frequencies, abs(fftshift(fftResult)));
title('Frequency Spectrum of x(t)');
xlabel('Frequency');
ylabel('Magnitude');
grid on;
```

The output:



The task given:

3. Compute the average power of $x(t)$ over one period.

My code:

```
% Task 3:
T = 1; % Period of the signal
power_x_t = (1/T) * trapz(t, x_t.^2); % Average power using numerical integration

fprintf('The average power of x(t) over one period is: %f\n', power_x_t);
```

The output:

```
The average power of x(t) over one period is: 9.398411
```

The task given:

Problem 2: Discrete-Time Signals and Systems

Given the discrete-time signal $x[n] = \{1, -2, 3, -4, 5\}$:

1. Determine the length of the signal.

My code:

```
% Problem 2
xn = [1, 2, 3, -4, 5];

% Task 1:
signalLength = length(xn);
disp(['Length of the signal is: ' num2str(signalLength)])
```

The output:

```
Length of the signal is: 5
```

The task given:

2. Find the value of $x[3]$.

My code:

```
% Task 2:
disp(['Value of x[3] is: ' num2str(xn(3))]);
```

The output:

```
Value of x[3] is: 3
```

The task given:

3. Compute the sum of all elements in the signal.

My code:

```
% Task 3:
sumSignal = sum(xn);
disp(['Sum of all elements is: ' num2str(sumSignal)]);
```

The output:

```
Sum of all elements is: 7
```

The task given:

4. Calculate the energy of the signal.

My code:

```
% Task 4:
energySignal = sum(xn.^2);
disp(['Energy of the signal is: ' num2str(energySignal)]);
```

The output:

```
Energy of the signal is: 55
```