MATLAB R2022b - academic use

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homework1.m | MATLAB_review.m | Homework2.mlx

Problem 1.95:

Write a set of MATLAB commands for approximating the following continuous-time periodic waveforms:

(a) Square wave of amplitude 5 volts, fundamental frequency 20 Hz, and duty cycle 0.6

(b) Sawtooth wave of amplitude 5 volts and fundamental frequency of 20 Hz

Plot five cycles of each of the waveforms.

```
%% Part (a)
amplitude = 5;    % Volts
fund_freq = 20;   % Hz
duty_cycle = 0.6; % Duty cycle
t = 0:0.001:5 * 1/fund_freq + 1;     % Time
squarewave = amplitude * square(2 * pi * fund_freq * t, duty_cycle * 100);
plot(t, squarewave);
axis([0 0.26 -6 6])
title('Problem 1.95a: Seth Ricks');
xlabel('Time (seconds)');
ylabel('Amplitude (V)');
grid on

%% Part (b)
amplitude = 5;    % Volts
fund_freq = 20;   % Hz
t = 0:0.001:5 * 1/fund_freq + 1;     % Time
Sawtooth = amplitude * sawtooth(2 * pi * fund_freq * t);
plot(t, Sawtooth);
axis([0 0.26 -6 6])
title('Problem 1.95b: Seth Ricks');
xlabel('Time (seconds)');
ylabel('Amplitude (V)');
grid on
```

Figure

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