

COEN 45
Spring Quarter, 2010
Homework #5
Due Tues May 2

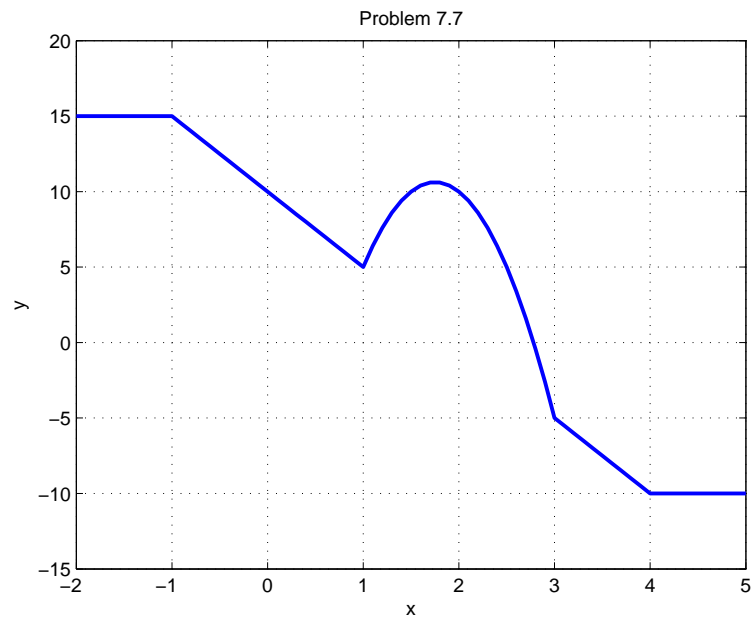
1. Use `find` to get index values to fill in $y = f(x)$ for $-2 \leq x \leq 5$ where

$$f(x) = \begin{cases} 15 & \text{for } x \leq -1 \\ -5x + 10 & \text{for } -1 \leq x \leq 1 \\ -10x^2 + 35x - 20 & \text{for } 1 \leq x \leq 3 \\ -5x + 10 & \text{for } 3 \leq x \leq 4 \\ -10 & \text{for } x \geq 4 \end{cases}$$

Hint:

```
x = -2:0.1:5;
ind = find(x <= -1); % condition for first range
y(ind) = 15;
ind = find(x > -1 && x <= 1); % condition for second range
y(ind) = -5*x(ind)+10;
% etc.
plot(x,y,'LineWidth',2);
axis([-2 5 -15 20]); % what does this do?
```

Plot y vs. x . Here is what you should see:



2. Solve problem 4.10 using the template on the web site, `p4p10.m`. You need only fill in two incomplete lines in the template.
3. Write a script to do problem 9, p. 229. Use a `switch` statement that tests the sign of the discriminant with three cases: -1, 0, 1. For each case, report the number of real roots. Also calculate and display them. Check the three cases shown on p. 229, and indicate the results (handwritten or comments in your script, diary not needed).
4. Write a separate script for problem 21, p. 232. Have the user enter a letter (B, C, D; upper or lower case) and use a `switch` based on the user's choice, with an `otherwise` clause to handle bogus input. Perform the checks indicated in the problem statement. Display the cost. Run the cases shown in the text and either hand-write or type in the results as comments.