Newton's Method Assignment

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Newton's Method Assignment

Question 0

Watch the lecture video here.

Did you watch the video? [Type yes or no.]

Question 1

Estimate the roots of the function f using the algorithm developed in class (copy Example 5):

- Graph the function.

- Use the graph to choose a guess close to one root.

- Use your guess to perform Newton's Method (use 10 iterations).

- Repeat the process for any additional roots.

Part a

$f(x) = x^3 - 3x^2 + 2x - 1$

[Hint: there is one answer.]

Part b

$f(x) = 3\ln(x) - x$

[Hint: there are two answers.]

Question 2

Find the points of intersection of two functions f_1 and f_2 (copy example 6):

- Define a new function $f(x) = f_1(x) - f_2(x)$.

- Follow the steps above to find the roots of f. These are the x-coordinates of the points of intersection.

- Find the y-coordinates of the points of intersection by plugging the roots into both f_1 and f_2 (you should get the same answer).

Part a

$f_1(x) = e^x$, $f_2(x) = 2 - x$

[Hint: there is one answer.]

Don't forget to find the y-coordinate at the end.

Part b

$f_1(x) = \ln(x)$, $f_2(x) = x^2 - 10$

[Hint: there are two answers, and one is *really* close to 0.]

Don't forget to find the y-coordinate at the end.