Name_____

Homework Assignment #4 due in class Wednesday, September 27

Cover sheet : Staple this page in front of your solutions.

INSTRUCTIONS: Write the requested *answers* (without calculations) on this page; write the detailed *solutions* (your work written clearly) on your own paper.

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[17] Problem 2.23.* *Answer: the terminal speed for the parachutist is ...*

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[18] Problem 2.31.** *Answer: the time for the basketball to fall to the ground from a 30 m tower is ...*

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[19] Problem 2.41.** *Answer: the calculated value of y_{max} is ...*

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[20] Problem 2.53.* *Answer: describe the particle's motion ...*

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[21] Problem 2.43.*** [computer]

Hand in the computer program, calculations, and plots.

Answer here: the horizontal distance where the ball hits the ground is ...

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[22] A mathematical exercise. Define $f_n(x) = (1 + x/n)^n$.

(A) What is the limit of $f_n(x)$ as $n \rightarrow \infty$. *Give a proof of the result.*

(B) Hand in a graph that shows, on one graph, $f_1(x)$, $f_2(x)$, $f_5(x)$ and $f_\infty(x)$ versus x for x from − 2 to 2. (Use a computer.)

Answer here: what is $f_\infty(x)$?