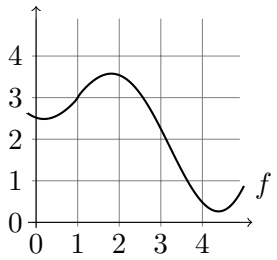
Name: _____

1. [**2 points**] Estimate the average rate of change of f from $x = 1$ to $x = 4$. Show your work and simplify your answer.



2. [**2 parts, 1 point each**] Classify each function as linear, concave up, or concave down. Circle one answer for each part.

(a)

t	-2	0	2	3
$f(t)$	5	1	-3	-5

linear concave up concave down

(b)

x	4	7	10	13
$g(x)$	12	16	22	30

linear concave up concave down

3. [**3 parts, 1 point each**] Susan and John need to travel from Columbia, SC to Chicago, IL, a distance of about 800 miles. Susan begins driving at time $t = 0$ hours. John begins driving at time $t = 1.5$ hours, and sets his cruise control to 68 miles per hour. When John begins driving, Susan has already traveled 90 miles. Both Susan and John travel at constant speed throughout the journey.

   (a) Give a linear formula for Susan's distance from Columbia at time t, for $t \geq 0$.

   (b) Give a linear formula for John's distance from Columbia at time t, for $t \geq 1.5$.

   (c) Will John pass Susan? If so, how far away from Columbia will John and Susan be when John passes? Give units and show your work.

Name: _____

Directions:

1. Do not turn the page until instructed to do so.
2. You may use a calculator provided it is not equipped with a Computer Algebra System (CAS).
3. Turn off and put away all other electronic equipment (especially cell phones), notes, and books.
4. Good luck!