FTC "Part 3"

Name _____

Your calculator will be required to complete problem #1. Be sure to show your analytic work before your numeric answer. For this problem, give each of your answers to three decimal places.

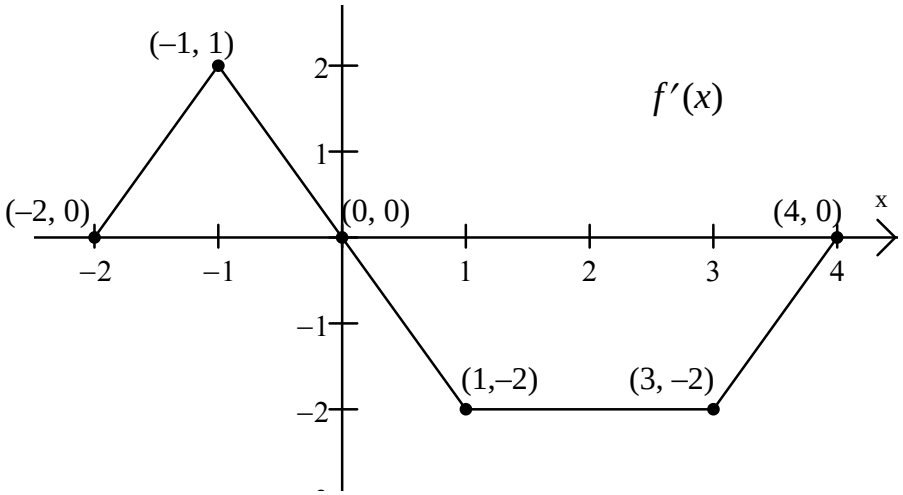
1) A particle starts at $x = 2$ and moves along the x-axis with velocity $v(t) = \cos(t^2)$ over the interval $0 \leq t \leq 3$ where t is measured in seconds.

   (a) Over what intervals is the particle moving to the left?

   (b) Find the total distance traveled by the particle over the interval $0 \leq t \leq 3$.

   (c) What is the final position of the particle on the x-axis?

2) Let f be a differentiable function over the interval $-2 \leq x \leq 4$ and containing the point (1, 3). The graph of its derivative $f'(x)$, consisting of four line segments, is shown below.



(a) Write the equation for the line tangent to f at the point (1, 3)

(b) Find $f(-2)$, $f(0)$, and $f(4)$

(c) Given that $f(1) = 3$, find the value for x other than 1 over the interval $-2 \leq x \leq 4$ for which $f(x) = 3$. Justify your answer.