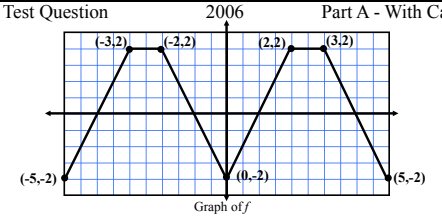
AP Test Question 2006 Part A - With Calculator



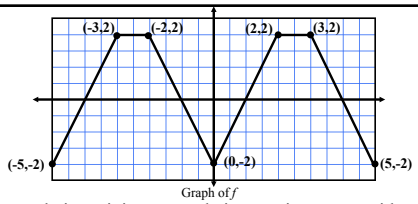
Graph of f

3) The graph of the function f shown above consists of six line segments.

Let g be the function give by $g(x) = \int_0^x f(t)\,dt$.

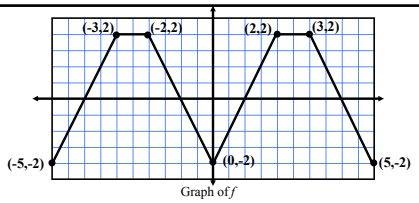
a) Find $g(4)$, $g'(4)$, and $g''(4)$.

$g(4) = 3$
$g'(4) = 0$
$g''(4) = -2$



Graph of f

b) Does g have a relative minimum, a relative maximum, or neither at $x = 1$? Justify your answer. **min**



Graph of f

c) Suppose that f is defined for all real numbers x and is periodic with a period of length 5. The graph above shows two periods of f. Given that $g(5) = 2$, find $g(10)$ and write an equation for the line tangent to the graph of g at $x = 108$. **$g(10) = 4$**

$y = 2x - 172$