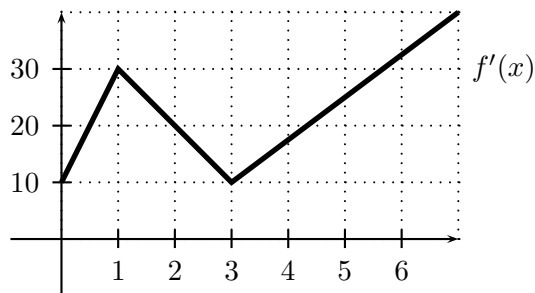


2. [12 points]

Use the graph of the function f' and the table of values for the function g to answer the questions below. Each problem requires only a small amount of work, but you must show it.



x	-20	-10	0	10	20	30
$g(x)$	0	4	0	-18	-56	-120
$g'(x)$	6	1	-10	-27	-50	-79

a. [3 points] Write a formula for the local linearization of g near $x = 10$ and use it to approximate $g(10.1)$.

b. [3 points] Using the table, estimate $g''(-10)$.

c. [3 points] If $f(3) = 30$, find the exact value of $f(1)$.

d. [3 points] Given that $f(3) = 30$, find the exact value of $\int_1^3 g'(f(z))f'(z)dz$.
(Hint: use part (c).)