3A.   3A.
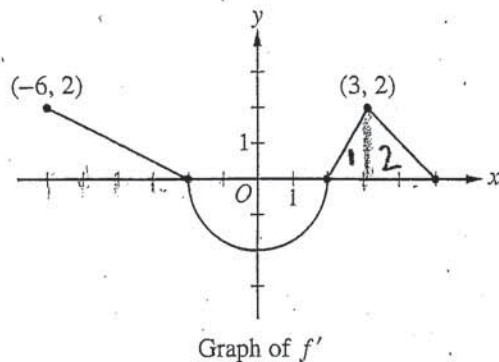

Graph of f'

3. The function f is differentiable on the closed interval $[-6, 5]$ and satisfies $f(-2) = 7$. The graph of f', the derivative of f, consists of a semicircle and three line segments, as shown in the figure above.

(a) Find the values of $f(-6)$ and $f(5)$.

$$f(-6) = \left(\int_{-2}^{-6} f'(x)\, dx \right) + f(-2)$$

$$f(-6) = 3$$

$$f(5) = f(-2) + \int_{-2}^{5} f'(x)\, dx$$

$$f(5) = 10 - 2\pi$$

(b) On what intervals is f increasing? Justify your answer.

f is increasing on $x = [-6, -2]$ $\cup [2, 5]$, since $f' > 0$ on the interval $x \in (-6, -2) \cup (2, 5)$

-14-

Do not write beyond this border.