

## Lesson 5.5: Graphing Derivatives and Antiderivatives from Graphs

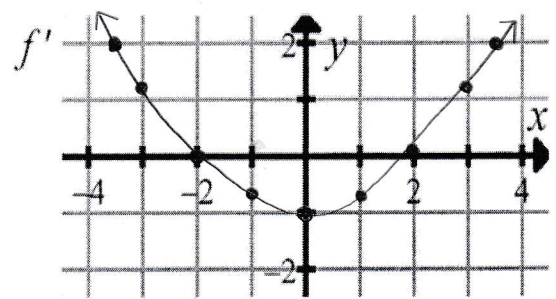
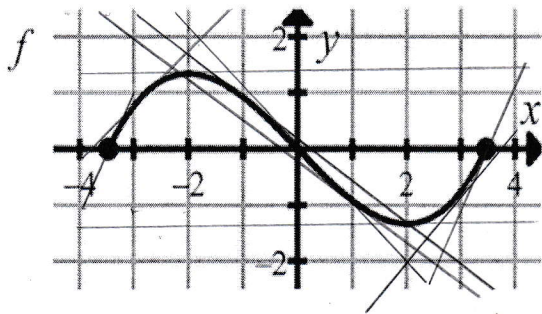
### Derivatives

$f$  graph  $\longrightarrow$   $f'$  graph                      or                       $f'$  graph  $\longrightarrow$   $f''$  graph

To graph a derivative of a function, find (or estimate) the slope of the curve and plot them as points.

Example:

- Use the graph of  $f$  shown to sketch a graph of  $f'$ .



$x$	$-\frac{7}{2}$	$-3$	$-2$	$-1$	$0$	$1$	$2$	$3$	$\frac{7}{2}$
$f'(x) \approx$	$2$	$1$	$0$	$-\frac{3}{4}$	$-1$	$-\frac{1}{3}$	$0$	$1$	$2$

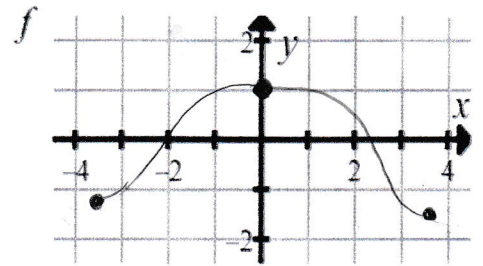
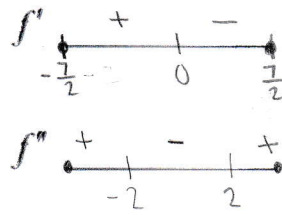
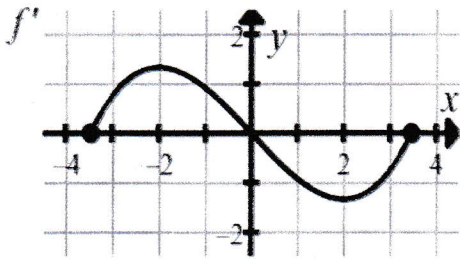
## Antiderivatives

$f'$  graph  $\longrightarrow$   $f$  graph

1. Make an  $f'$  number line by using the location or position of the points on the  $f'$  graph. This does **not** involve the slopes of  $f'$ .
2. Make an  $f''$  number line by using the slopes of the  $f'$  graph.
3. Combine information from both number lines to graph  $f$ . If no starting point is given, you are free to shift the graph vertically.

Examples:

1. Use the graph of  $f'$  shown to sketch the graph of  $f$  with a starting point of  $(0,1)$ .



2. Use the graph of  $f'$  shown to sketch the graph of  $f''$  and a possible graph of  $f$ .

