

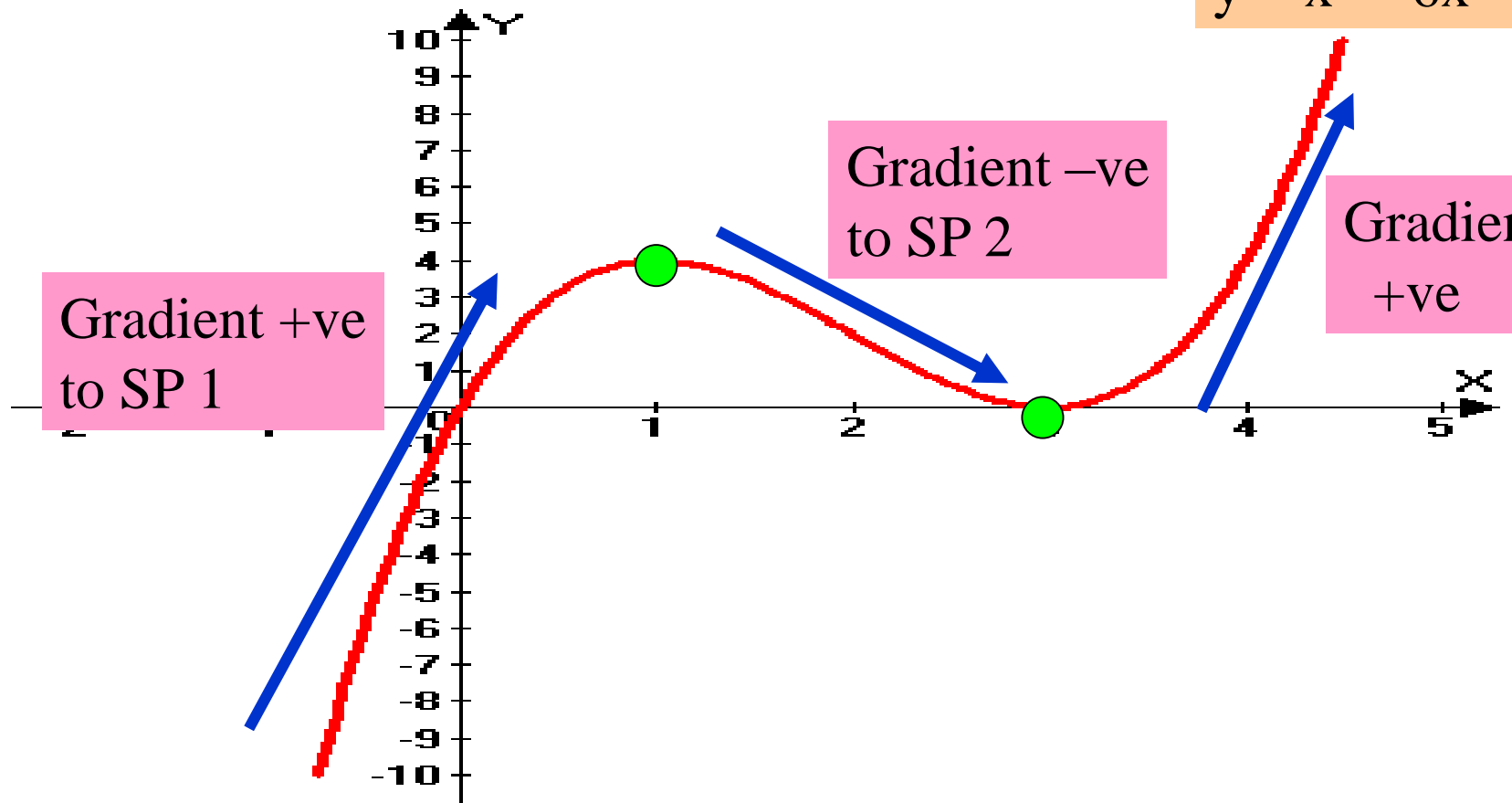
11.

Graph of the Derived Function



What will the graph of a derivative look like?

$$y = x^3 - 6x^2 + 9x$$



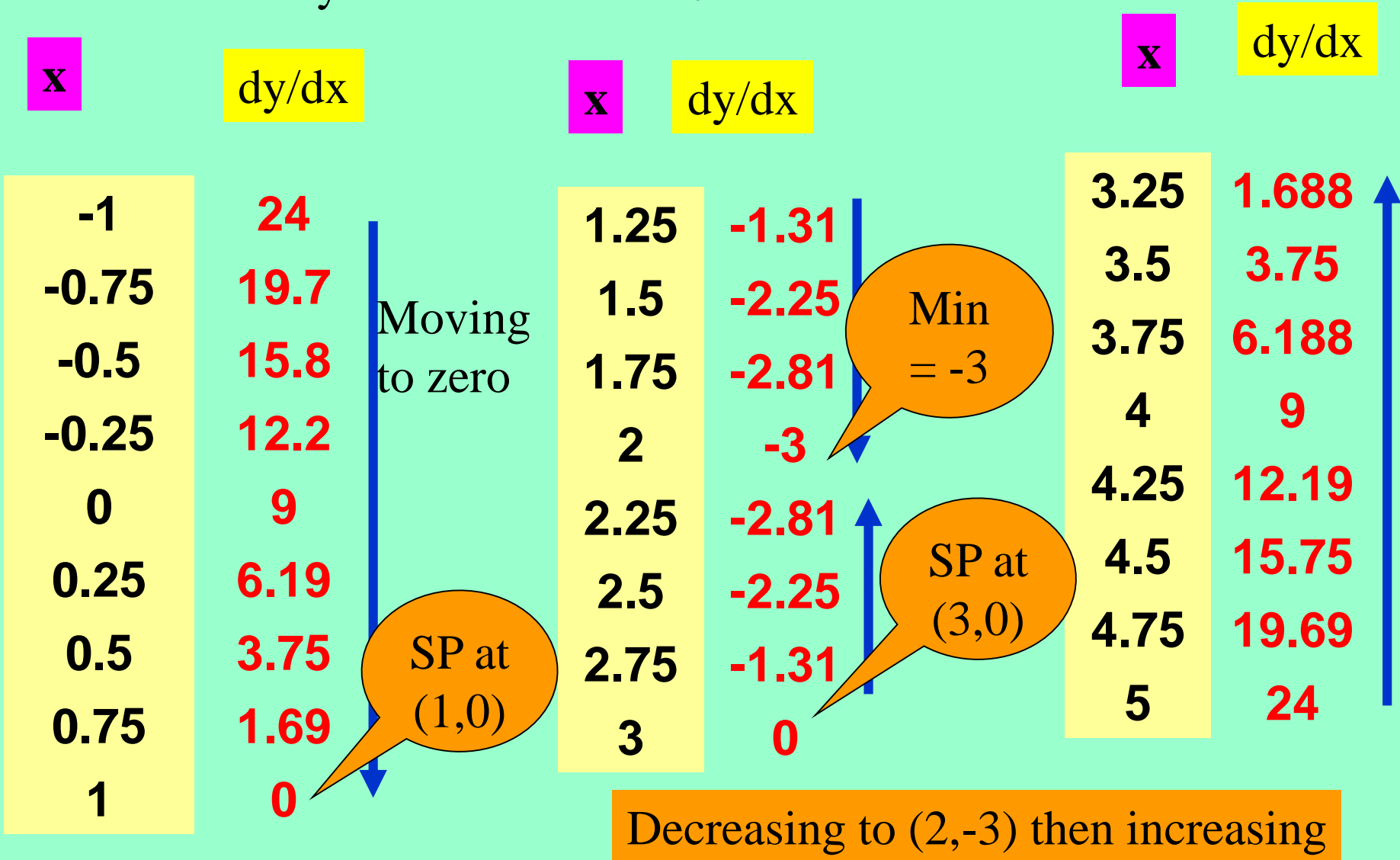
Imagine you were asked to sketch a graph of $f'(x)$

What would the key points be?

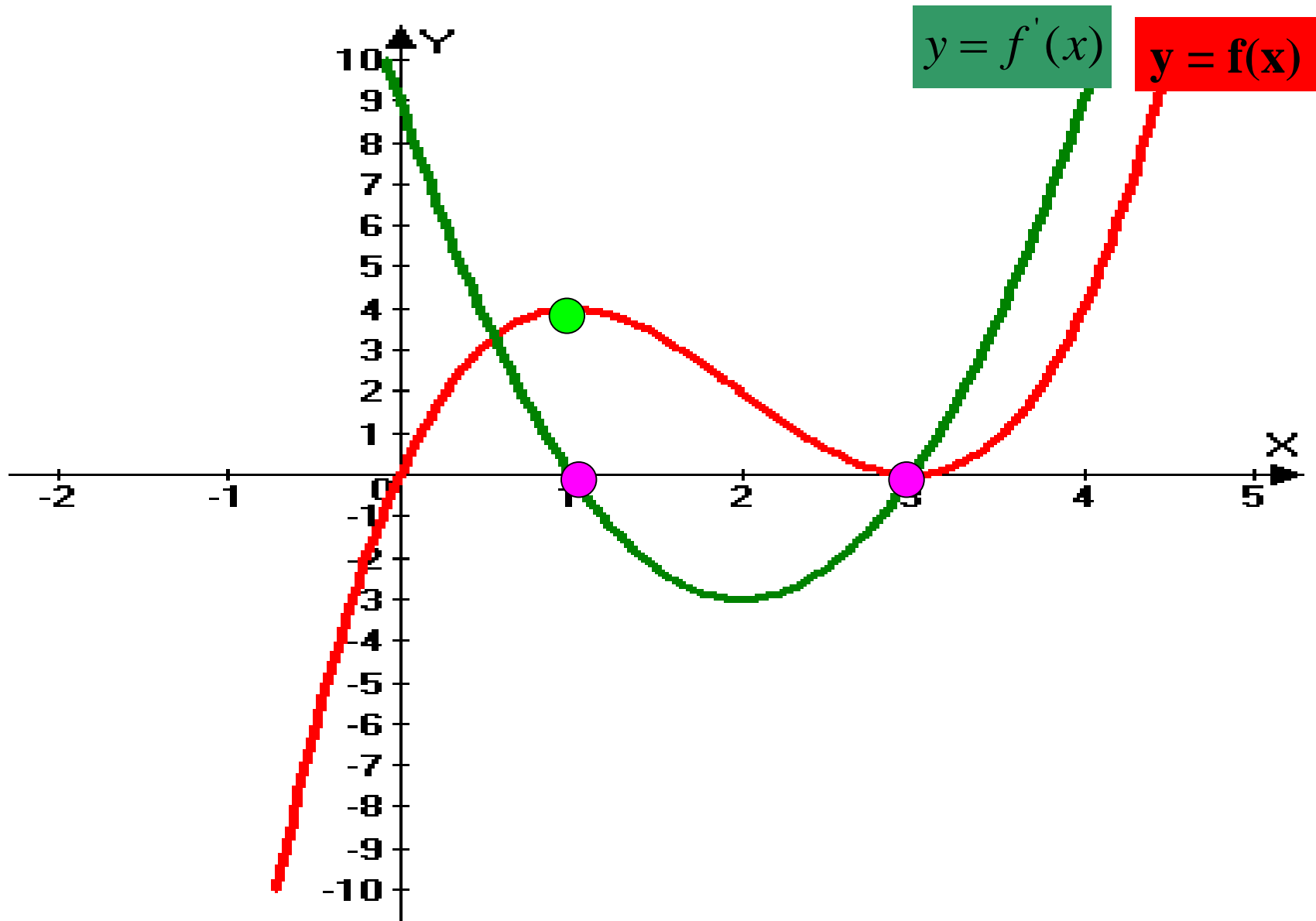
Is the gradient constant?

$$y = x^3 - 6x^2 + 9x$$

Lets consider $dy/dx = 3x^2 - 12x + 9$

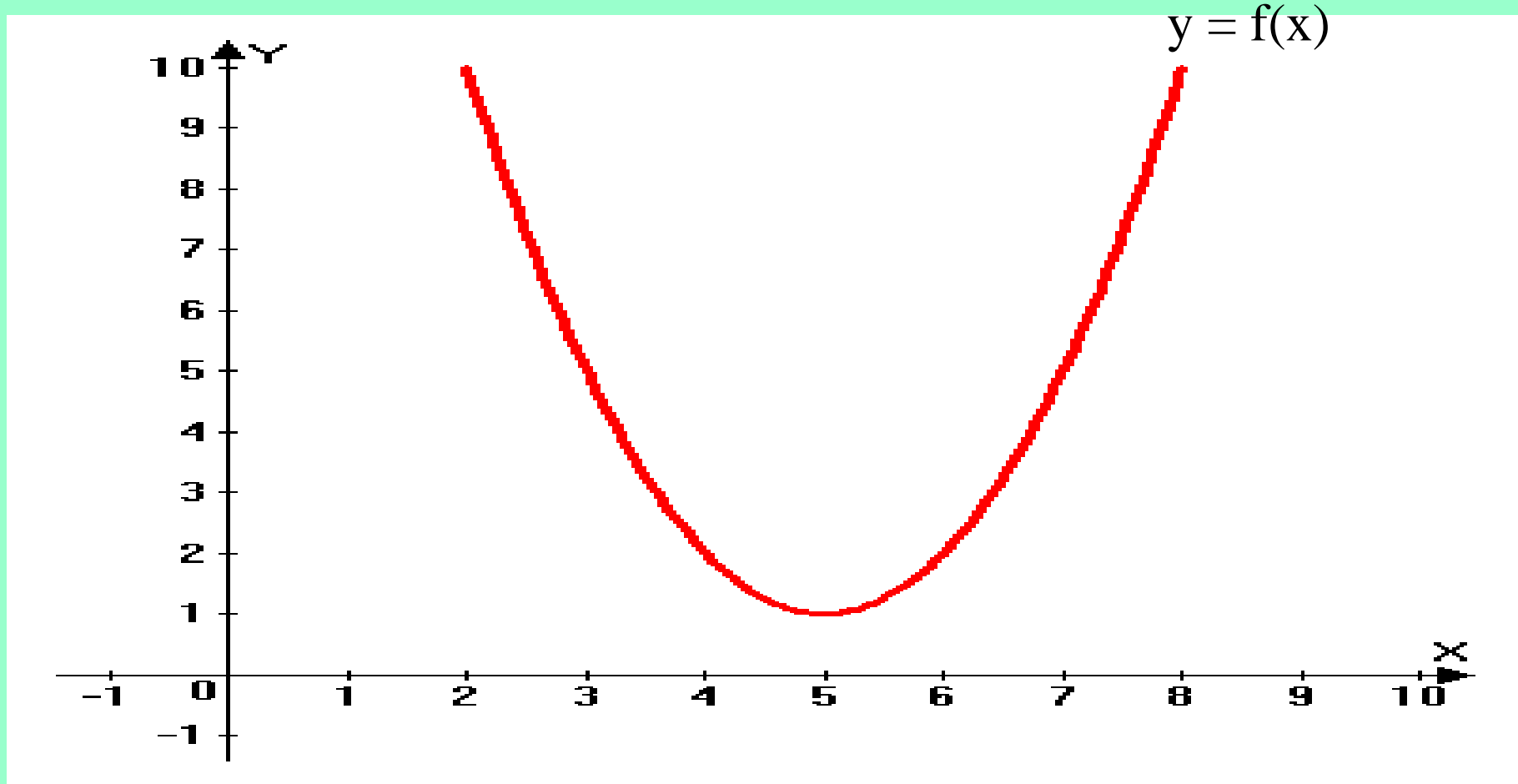


The original and the derived



Example 1

Sketch the derived function for $f(x)$

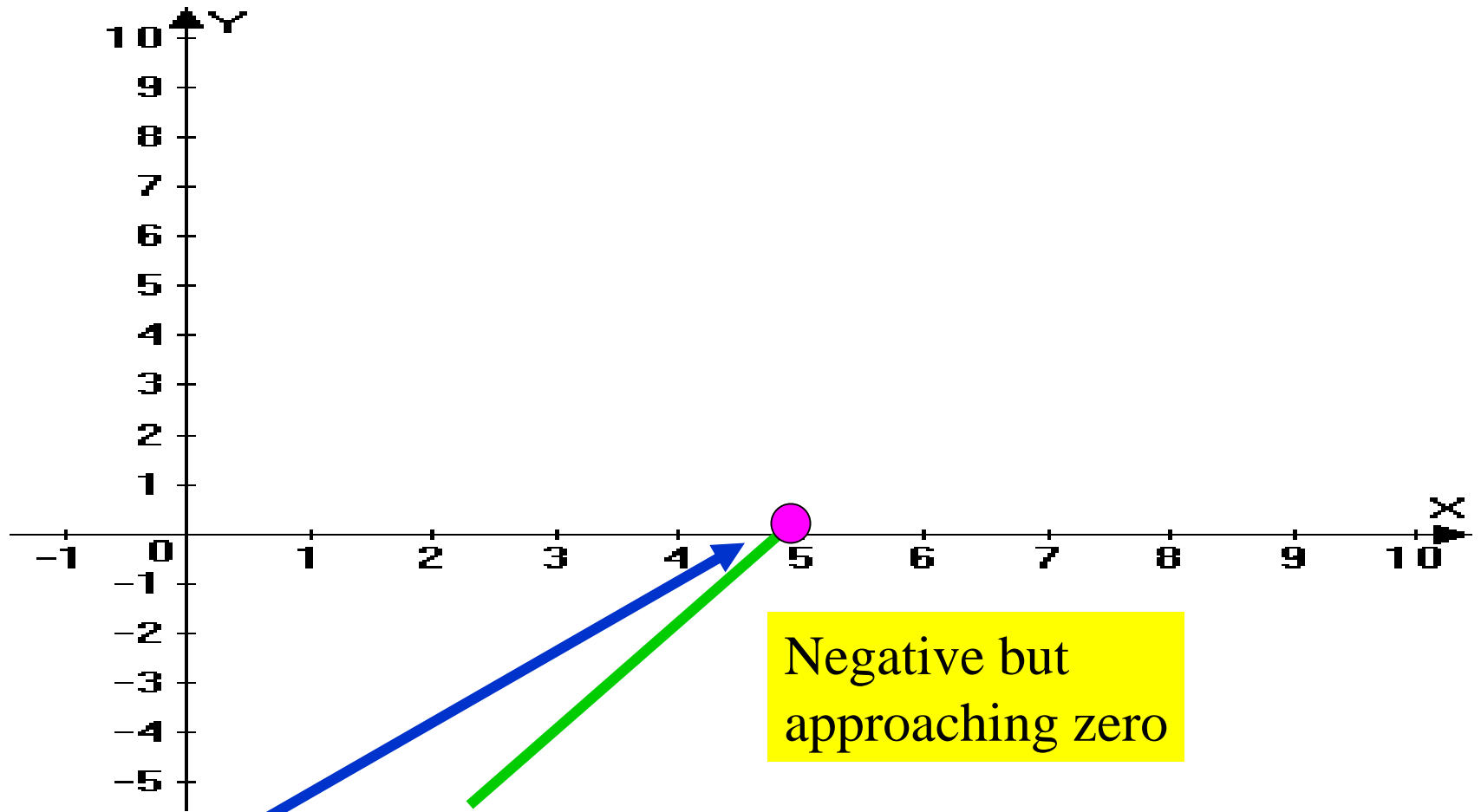


SP occurs
at $x = 5$

x	\rightarrow	5	\rightarrow
$f'(x)$	-	0	+

New y-values

Example 1

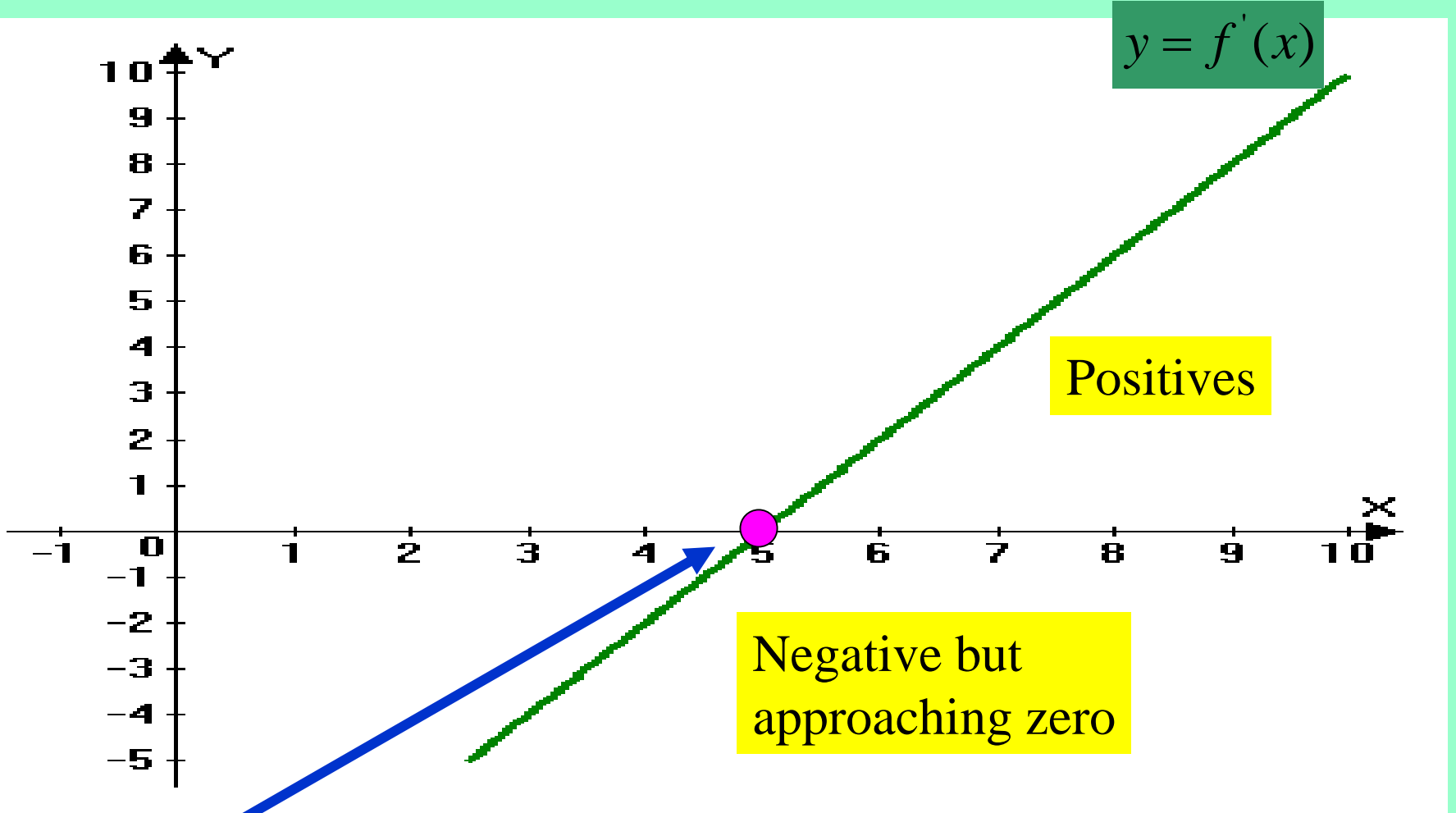


SP occurs
at $x = 5$

x	\rightarrow	5	\rightarrow
$f'(x)$	-	0	+

New y-values

Example 1



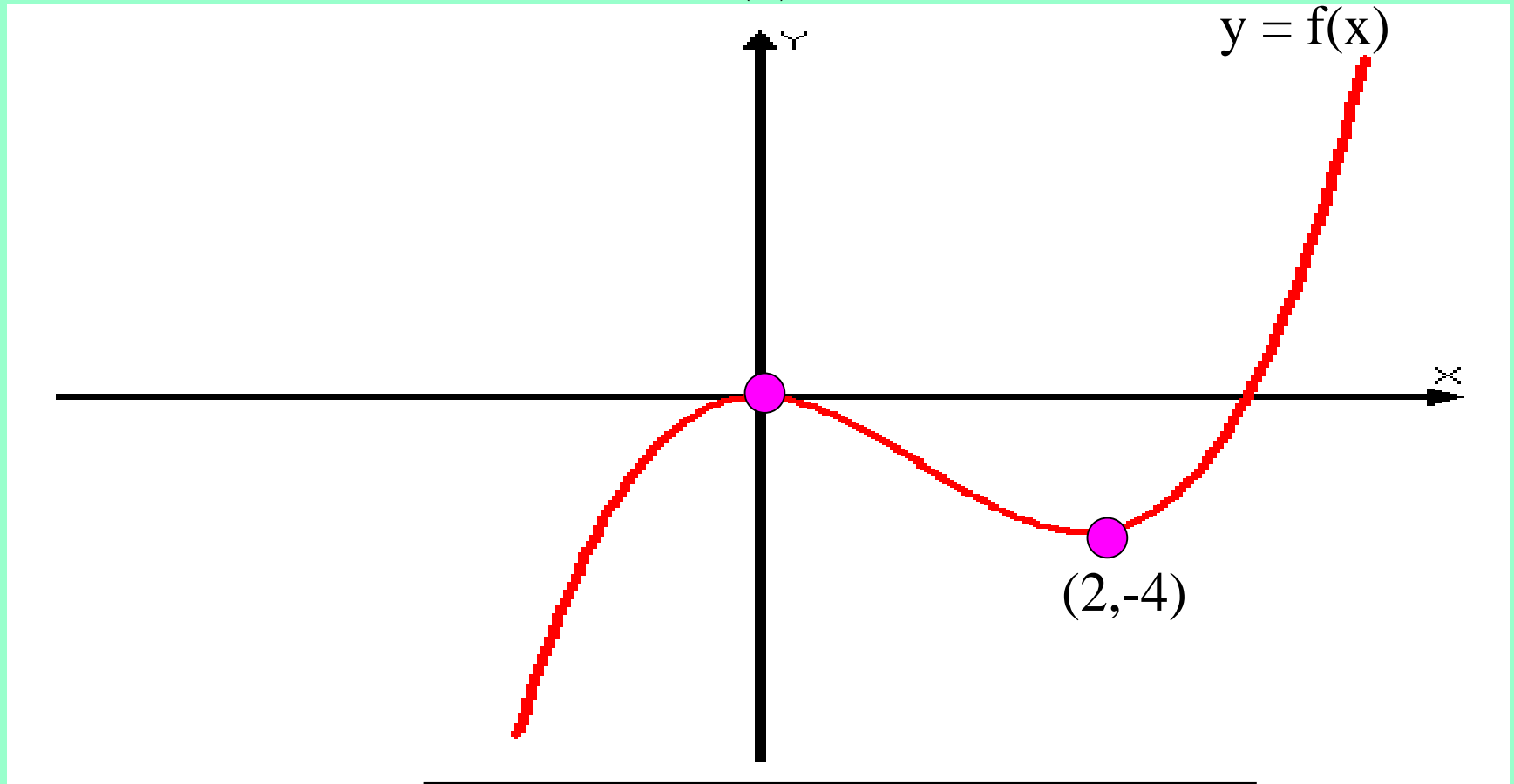
SP occurs
at $x = 5$

x	\rightarrow	5	\rightarrow
$f'(x)$	-	0	+

New y-values

Example 2

Sketch the derived function for $f(x)$



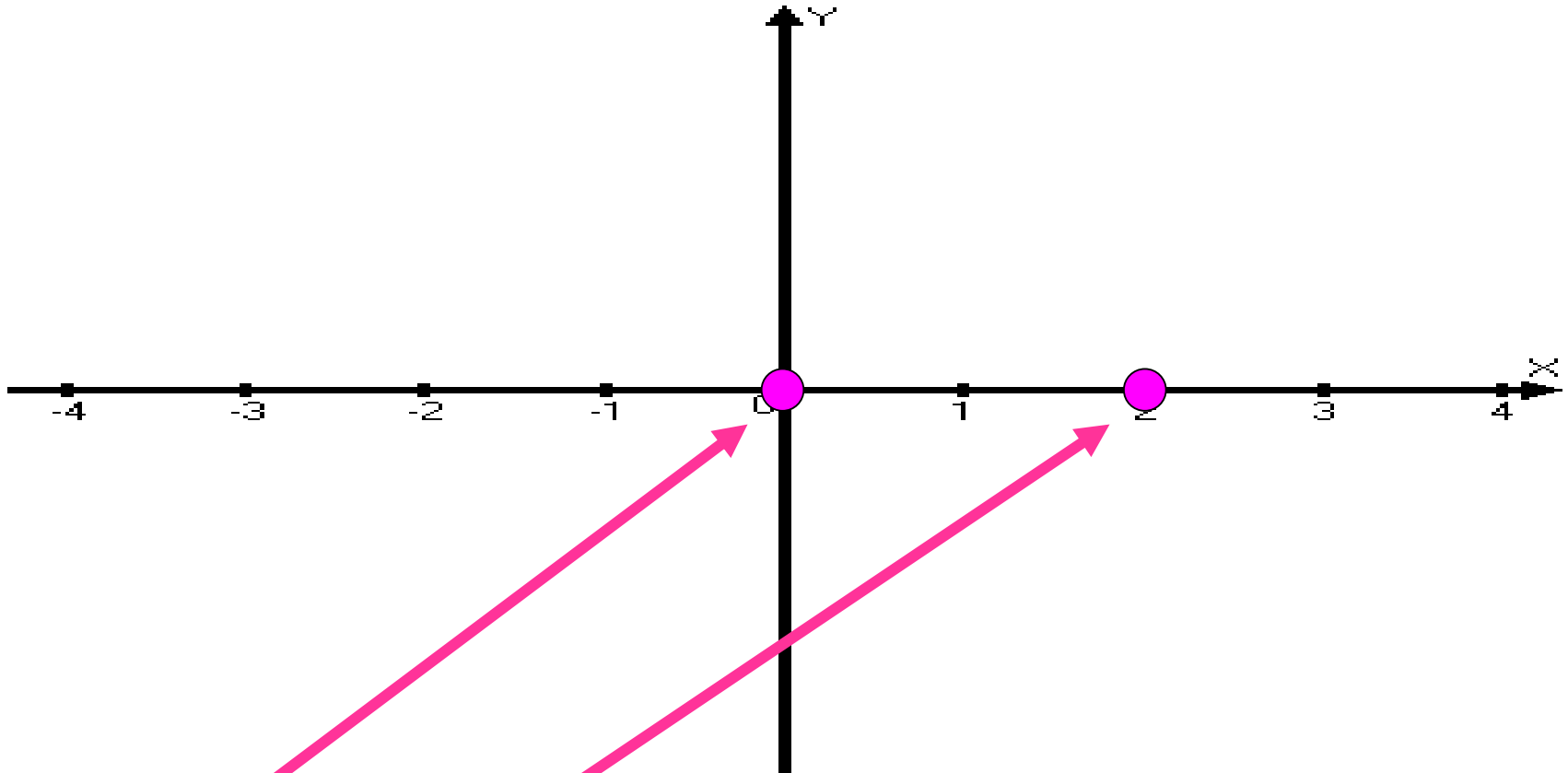
SPs occur at
 $x = 0$ & $x = 2$

x	\longrightarrow	0	\longrightarrow	2	\longrightarrow
$f'(x)$	$+$	0	$-$	0	$+$

New y-values

Example 2

Sketch the derived function for $f(x)$



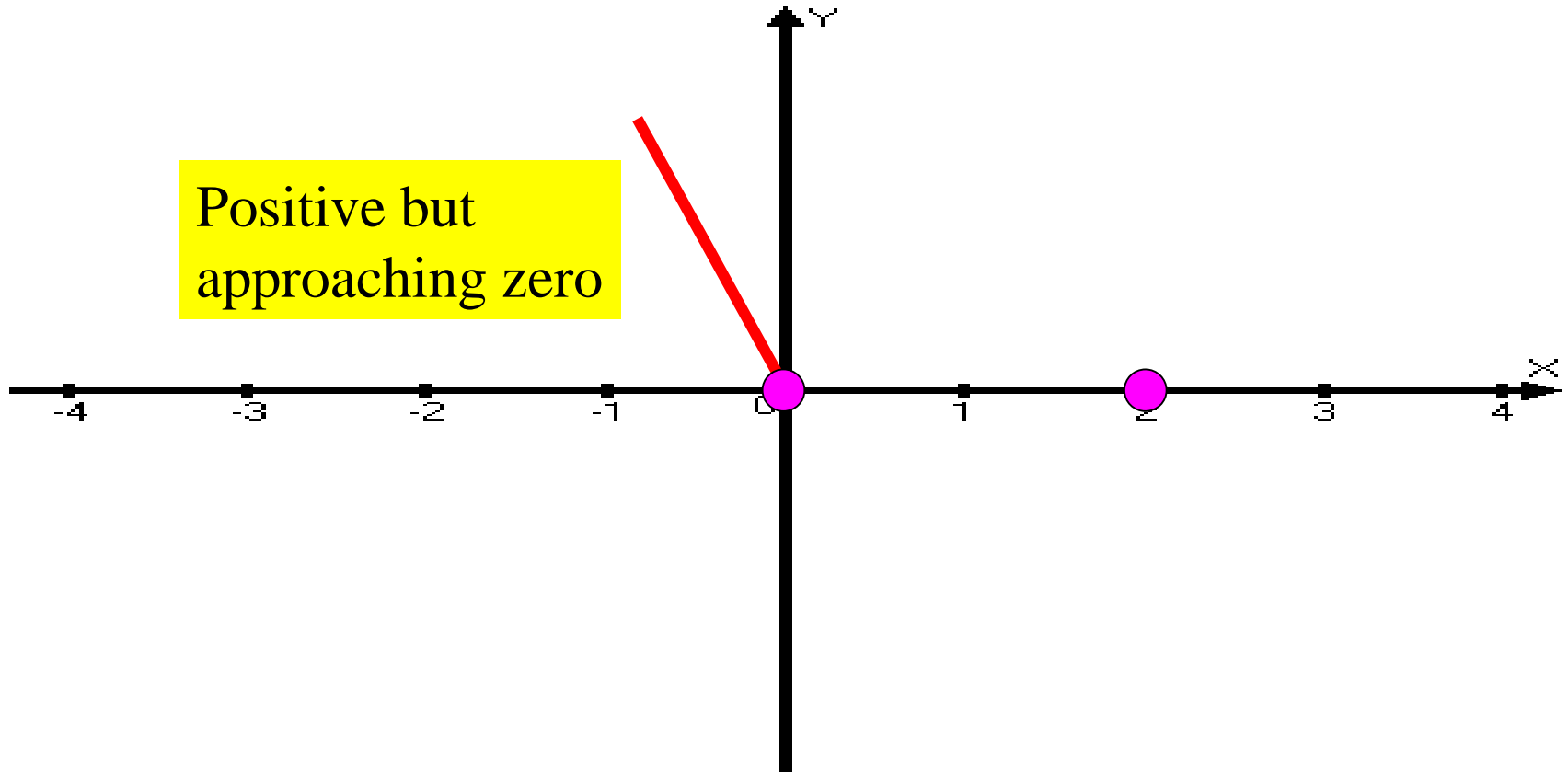
SPs occur at
 $x = 0$ & $x = 2$

x	\rightarrow	0	\rightarrow	2	\rightarrow
$f'(x)$	+	0	-	0	+

New y-values

Example 2

Sketch the derived function for $f(x)$



SPs occur at
 $x = 0$ & $x = 2$

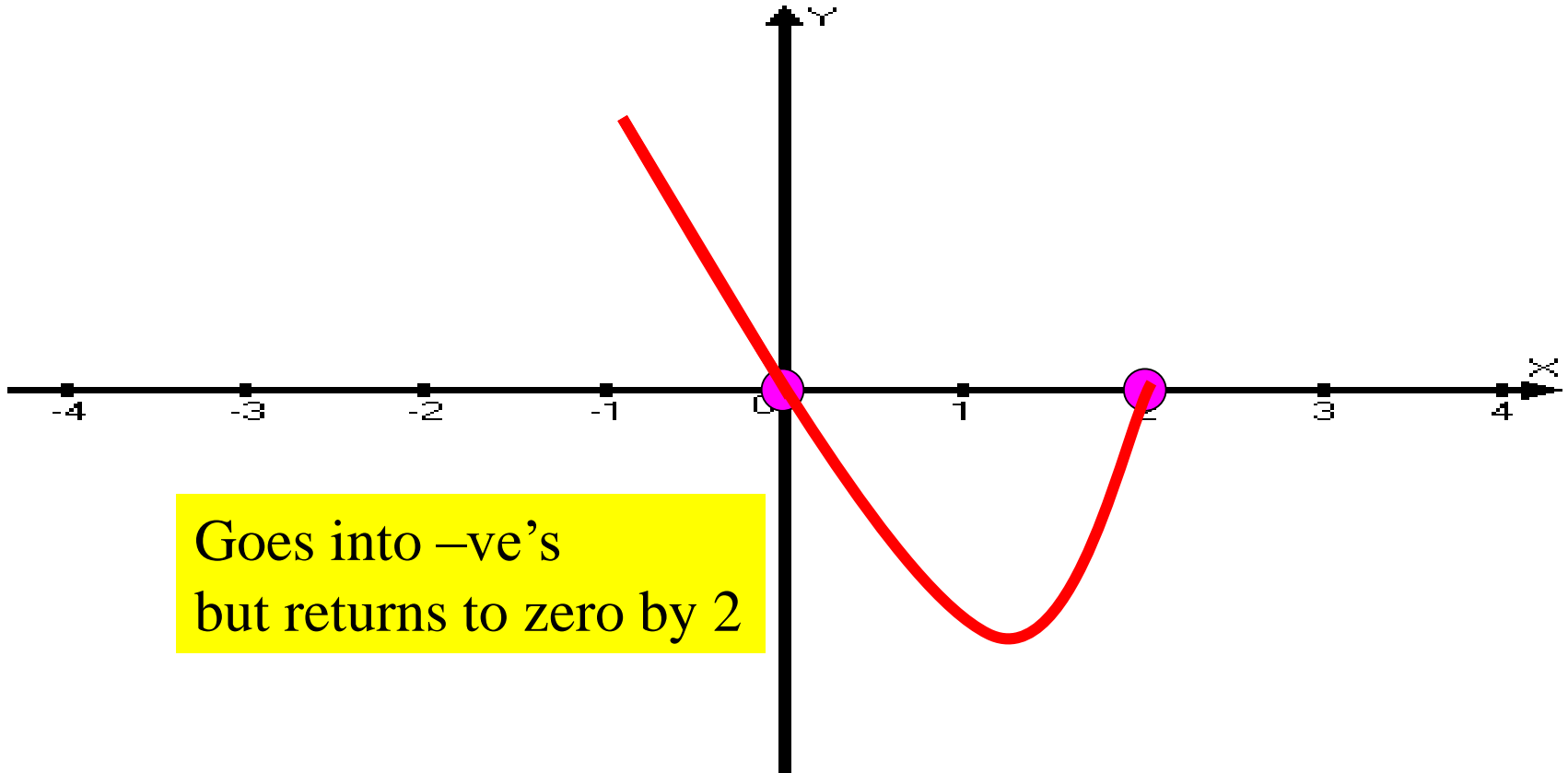
x	\rightarrow	0	\rightarrow	2	\rightarrow
$f'(x)$	+	0	-	0	+

New y-values



Example 2

Sketch the derived function for $f(x)$



Goes into $-ve$'s
but returns to zero by 2

SPs occur at
 $x = 0$ & $x = 2$

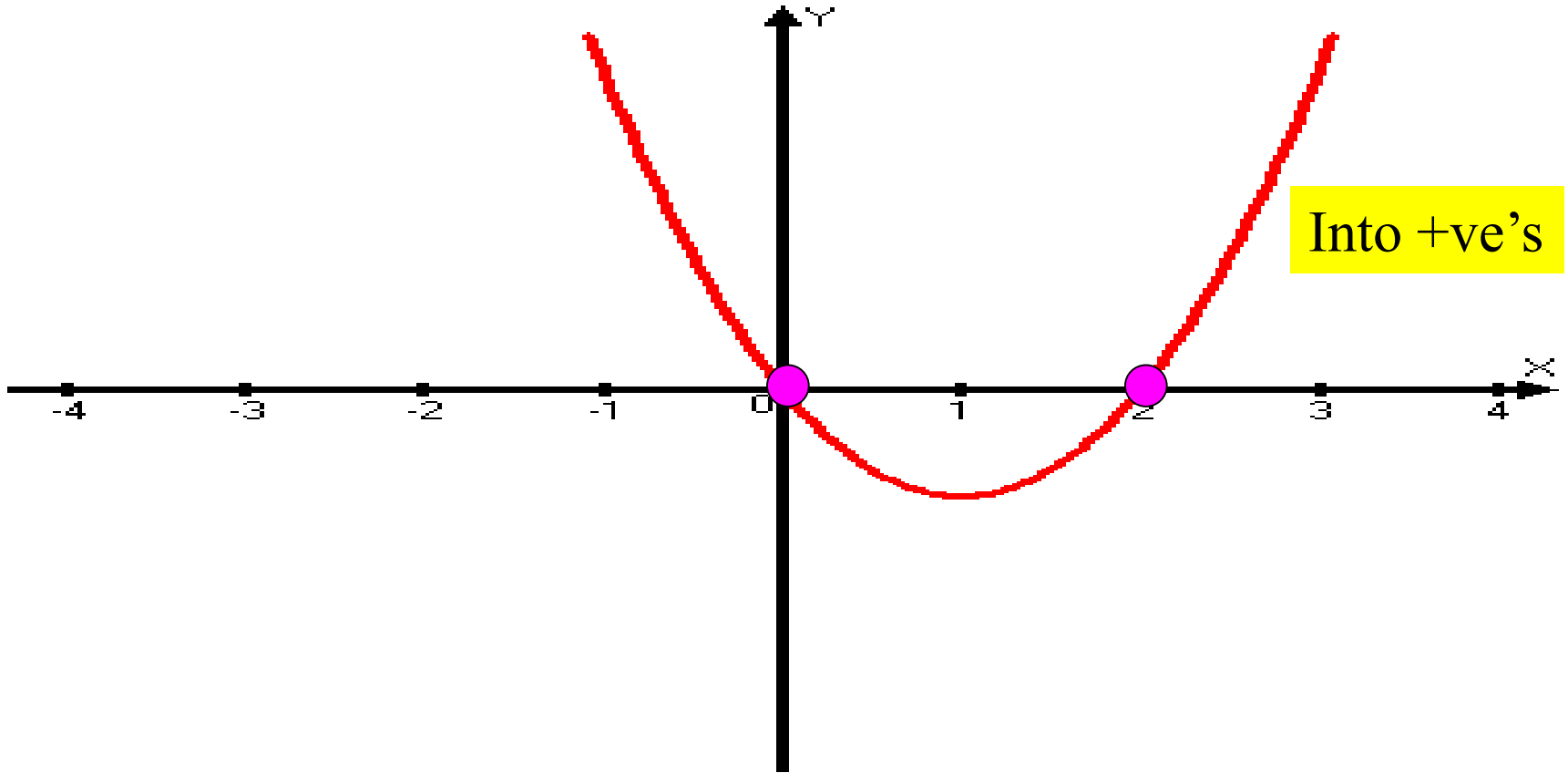
x	\longrightarrow	0	\longrightarrow	2	\longrightarrow
$f'(x)$	+	0	-	0	+

New y-values



Example 2

Sketch the derived function for $f(x)$



SPs occur at
 $x = 0$ & $x = 2$

x	\rightarrow	0	\rightarrow	2	\rightarrow			
$f'(x)$		+		-		0		+

New y-values

Heinemann , p.111, EX 6P