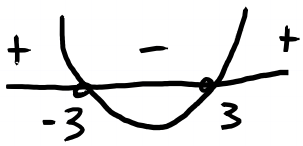
11. $f'(x) = 2x - \frac{18}{x} = \frac{2x^2-18}{x}$

Signe de $2x^2-18$:



Signe de x : $x > 0$

x	0		3		$+\infty$
$2x^2-18$	‖	$-$	ϕ	$+$	
x	‖	$+$		$+$	
f'	‖	$-$	ϕ	$+$	
f	‖ $+\infty$	↘	$f(3)$	↗	$+\infty$

$$\lim_{\substack{x \to 0 \\ x>0}} f(x) = 0 - 18(-\infty) + 18 = +\infty$$

$$f(3) = 9 - 18\ln 3 + 18 = 27 - 18\ln 3$$

$$\lim_{x \to +\infty} f(x) = \lim_{x \to +\infty} x^2\left(1 - 18\frac{\ln x}{x^2} + \frac{18}{x^2}\right) = +\infty$$