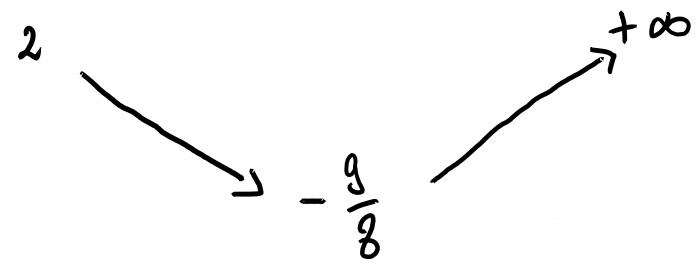


$$12. \quad f'(x) = 4e^{2x} - 5e^x = e^x(4e^x - 5)$$

Signe e^x : positif $e^x > 0 \rightarrow$ toujours

Signe de $4e^x - 5$:

$$4e^x - 5 > 0 \Leftrightarrow e^x > \frac{5}{4} \Leftrightarrow x > \ln\left(\frac{5}{4}\right)$$

x	$-\infty$	$\ln(5/4)$	$+\infty$
e^x		+	
$4e^x - 5$	-	0	+
f'	-	0	+
f			

$$\lim_{x \rightarrow -\infty} f(x) = 0 - 0 + 2 = 2$$

$$\begin{aligned} f\left(\ln\left(\frac{5}{4}\right)\right) &= 2e^{2\ln(5/4)} - 5e^{\ln(5/4)} + 2 = \\ &= 2e^{\ln(5/4)^2} - 5 \times \frac{5}{4} + 2 = \end{aligned}$$

$$= 2 \times \left(\frac{5}{4}\right)^2 - \frac{25}{4} + 2 =$$

$$= \frac{50}{16} - \frac{25}{4} + 2 = \frac{50 - 100 + 32}{16} = -\frac{18}{16} = -\frac{9}{8}$$

$$\lim_{x \rightarrow +\infty} f(x) = \lim_{x \rightarrow +\infty} 2e^{2x} = +\infty$$