

$$a^b = e^{b \ln(a)}$$

Exercice 74 page 133

$$\begin{aligned} a) \quad 1,6^{2,1} \times 1,6^{0,7} &= 1,6^{2,1+0,7} \\ &= 1,6^{2,8} \\ &= e^{2,8 \ln(1,6)} \approx 3,729 \end{aligned}$$

$$\begin{aligned} b) \quad 3,5^{-1,5} \times 2^{-1,5} &= (3,5 \times 2)^{-1,5} \\ &= 7^{-1,5} \\ &= e^{-1,5 \ln(7)} \approx 0,089 \end{aligned}$$

$$\begin{aligned} c) \quad (0,6^{1,3})^2 &= 0,6^{1,3 \times 2} \\ &= 0,6^{2,6} \\ &= e^{2,6 \ln(0,6)} \approx 0,265 \end{aligned}$$

$$\begin{aligned} d) \quad \frac{6,9^{2,8}}{6,9^{0,5}} &= 6,9^{2,8-0,5} \\ &= 6,9^{2,3} \\ &= e^{2,3 \ln(6,9)} \approx 84,987 \end{aligned}$$

Exercice 75 page 133

$$\begin{aligned} a) \quad a^{0,2} \times a^{-6,9} &= a^{0,2-6,9} \\ &= a^{-6,7} \end{aligned}$$

$$\begin{aligned} b) \quad (a^{-8})^{\frac{1}{4}} &= a^{-8 \times \frac{1}{4}} \\ &= a^{-2} \end{aligned}$$

$$\begin{aligned} c) \quad \frac{a^{0,8}}{a^{\frac{1}{5}}} &= a^{0,8-\frac{1}{5}} \\ &= a^{0,8-0,2} \\ &= a^{0,6} \end{aligned}$$

Exercice 76, 77, 78, 79 page 133

$$f(x) = 0,5^x$$

$$76) \lim_{x \rightarrow -\infty} f(x) = +\infty \quad \lim_{x \rightarrow +\infty} f(x) = 0 \quad f(x) = e^{x \ln(0,5)}$$

$$f(x) = 1,6^x$$

$$77) \lim_{x \rightarrow -\infty} f(x) = 0 \quad \lim_{x \rightarrow +\infty} f(x) = +\infty \quad f(x) = e^{x \ln(1,6)}$$

$$f(x) = 3,6^x$$

$$78) \lim_{x \rightarrow -\infty} f(x) = 0 \quad \lim_{x \rightarrow +\infty} f(x) = +\infty \quad f(x) = e^{x \ln(3,6)}$$

$$f(x) = 0,7^x$$

$$79) \lim_{x \rightarrow -\infty} f(x) = +\infty \quad \lim_{x \rightarrow +\infty} f(x) = 0 \quad f(x) = e^{x \ln(0,7)}$$

$$76) \text{ Comme } \ln(0,5) < 0 \\ \lim_{x \rightarrow -\infty} x \ln(0,5) = +\infty$$

$$\boxed{\text{Donc } \lim_{x \rightarrow -\infty} e^{x \ln(0,5)} = +\infty}$$

$$\text{Comme } \ln(0,5) < 0 \\ \lim_{x \rightarrow +\infty} x \ln(0,5) = -\infty$$

$$\boxed{\text{Donc } \lim_{x \rightarrow +\infty} e^{x \ln(0,5)} = 0}$$

$$77) \text{ Comme } \ln(1,6) > 0 \\ \lim_{x \rightarrow +\infty} x \ln(1,6) = +\infty$$

$$\boxed{\text{Donc } \lim_{x \rightarrow +\infty} e^{x \ln(1,6)} = +\infty}$$

$$\text{Comme } \ln(1,6) > 0 \\ \lim_{x \rightarrow -\infty} x \ln(1,6) = -\infty$$

$$\boxed{\text{Donc } \lim_{x \rightarrow -\infty} e^{x \ln(1,6)} = 0}$$

$$78) \text{ Comme } \ln(3,6) > 0 \\ \lim_{x \rightarrow -\infty} x \ln(3,6) = -\infty$$

$$\boxed{\text{Donc } \lim_{x \rightarrow -\infty} e^{x \ln(3,6)} = 0}$$

$$\text{Comme } \ln(3,6) > 0 \\ \lim_{x \rightarrow +\infty} x \ln(3,6) = +\infty$$

$$\boxed{\text{Donc } \lim_{x \rightarrow +\infty} e^{x \ln(3,6)} = +\infty}$$

$$79) \text{ Comme } \ln(0,7) < 0 \\ \lim_{x \rightarrow -\infty} x \ln(0,7) = +\infty$$

$$\boxed{\text{Donc } \lim_{x \rightarrow -\infty} e^{x \ln(0,7)} = +\infty}$$

$$\text{Comme } \ln(0,7) < 0 \\ \lim_{x \rightarrow +\infty} x \ln(0,7) = -\infty$$

$$\boxed{\text{Donc } \lim_{x \rightarrow +\infty} e^{x \ln(0,7)} = 0}$$

$$(e^u)' = u' e^u$$

Exercice 80, 81, 82 et 83 page 133,

$$f(x) = 0,6^x$$

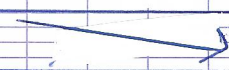
80) f est décroissante sur $\mathbb{R}$

$$f(x) = e^{x \ln(0,6)}$$

$$f'(x) = \underbrace{\ln(0,6)}_{-} \underbrace{e^{x \ln(0,6)}}_{+}$$

$$u = x \ln(0,6)$$

$$u' = \ln(0,6)$$

x	$-\infty$	$+\infty$
$f'(x)$		-
$f(x)$		

$$f(x) = 4,6^x$$

81) f est croissante sur $\mathbb{R}$

$$f(x) = e^{x \ln(4,6)}$$

$$f'(x) = \underbrace{\ln(4,6)}_{+} \underbrace{e^{x \ln(4,6)}}_{+}$$

$$u = x \ln(4,6)$$

$$u' = \ln(4,6)$$

x	$-\infty$	$+\infty$
$f'(x)$		+
$f(x)$		

$$f(x) = 3,2^x$$

82) f est croissante sur $\mathbb{R}$

$$f(x) = e^{x \ln(3,2)}$$

$$f'(x) = \underbrace{\ln(3,2)}_{+} \underbrace{e^{x \ln(3,2)}}_{+}$$

$$u = x \ln(3,2)$$

$$u' = \ln(3,2)$$

x	$-\infty$	$+\infty$
$f'(x)$		+
$f(x)$		

$$f(x) = 0,3^x$$

83) f est décroissante sur $\mathbb{R}$

$$f(x) = e^{x \ln(0,3)}$$

$$f'(x) = \underbrace{\ln(0,3)}_{-} \underbrace{e^{x \ln(0,3)}}_{+}$$

$$u = x \ln(0,3)$$

$$u' = \ln(0,3)$$

x	$-\infty$	$+\infty$
$f'(x)$		-
$f(x)$		