Fiche n° 10. Dérivation

Réponses

10.1 a) $\boxed{6x^2+2x-11}$

10.1 b) $\boxed{5x^4-6x^2+4x-15}$

10.1 c) $\boxed{(2x^2-2x+10)\exp(2x)}$

10.1 d) $\boxed{(6x-1)\ln(x-2)+\dfrac{3x^2-x}{x-2}}$

10.2 a) $\boxed{5(x^2-5x)^4(2x-5)}$

10.2 b) $\boxed{4(2x^3+4x-1)(3x^2+2)}$

10.2 c) $\boxed{8\cos^2(x)-6\cos(x)\sin(x)-4}$

10.2 d) $\boxed{-3(3\cos(x)-\sin(x))^2(3\sin(x)+\cos(x))}$

10.3 a) $\boxed{\dfrac{2x}{x^2+1}}$

10.3 b) $\boxed{\dfrac{1}{x\ln(x)}}$

10.3 c) $\boxed{(-2x^2+3x-1)\exp(x^2+x)}$

10.3 d) $\boxed{6\cos(2x)\exp(3\sin(2x))}$

10.3 e) $\boxed{\dfrac{\cos(x)}{2\sqrt{\sin(x)}}}$

10.3 f) $\boxed{\dfrac{\cos(\sqrt{x})}{2\sqrt{x}}}$

10.4 a) $\boxed{\dfrac{(2x+3)(2\sin(x)+3)-(x^2+3x)\times 2\cos(x)}{(2\sin(x)+3)^2}}$

10.4 b) $\boxed{\dfrac{2-3x}{2\sqrt{x}(3x+2)^2}}$

10.4 c) $\boxed{-2\dfrac{(x^2+1)\sin(2x+1)+x\cos(2x+1)}{(x^2+1)^2}}$

10.4 d) $\boxed{\dfrac{(4x+3)\ln(x)-2x-3}{(\ln(x))^2}}$

10.5 a) $\boxed{2x\sin\left(\dfrac{1}{x}\right)-\cos\left(\dfrac{1}{x}\right)}$

10.5 b) $\boxed{\dfrac{9}{(9-x^2)\sqrt{9-x^2}}}$

10.5 c) $\boxed{\dfrac{1}{1-x^2}}$

10.5 d) $\boxed{\dfrac{x\cos(x)-\sin(x)}{x\sin(x)}}$

10.6 a) $\boxed{\dfrac{10x-5}{(3-x)^2(2+x)^2}}$

10.6 b) $\boxed{\dfrac{2}{x+1}\left(x+\dfrac{1+\sqrt{3}}{2}\right)\left(x+\dfrac{1-\sqrt{3}}{2}\right)}$

10.6 c) $\boxed{\dfrac{2x^2+2x+5}{(x+2)(x-1)^2}}$

10.6 d) $\boxed{\dfrac{x^2}{(x+1)^2}}$

10.6 e) $\boxed{\dfrac{2}{x(1-\ln(x))^2}}$

Corrigés

10.1 a) On calcule : $f'(x)=(2x+3)(2x-5)+(x^2+3x+2)\times 2=6x^2+2x-11$.

10.1 b) On calcule : $f'(x)=(3x^2+3)(x^2-5)+(x^3+3x+2)\times 2x=5x^4-6x^2+4x-15$.

10.1 c) On calcule : $f'(x)=(2x-2)\exp(2x)+(x^2-2x+6)\times 2\exp(2x)=(2x^2-2x+10)\exp(2x)$.

10.1 d) On calcule : $f'(x)=(6x-1)\ln(x-2)+(3x^2-x)\times\dfrac{1}{x-2}=(6x-1)\ln(x-2)+\dfrac{3x^2-x}{x-2}$.

10.2 a) On calcule : $f'(x)=5(x^2-5x)^4(2x-5)$.

Fiche n° 16. Systèmes linéaires

Réponses

16.1 a) ..... $\boxed{\{(3,1)\}}$

16.1 b) ..... $\boxed{\{(7,2)\}}$

16.1 c) ..... $\boxed{\left\{\left(\frac{1}{3},\frac{2}{3}\right)\right\}}$

16.1 d) ..... $\boxed{\left\{\left(\frac{\sqrt{2}}{3},\frac{\sqrt{2}}{2}\right)\right\}}$

16.2 a) ..... $\boxed{\left\{\left(1-\frac{a}{4},\frac{-1}{2}+\frac{3}{8}a\right)\right\}}$

16.2 b) ..... $\boxed{(2,-3)}$

16.2 c) ..... $\boxed{\left\{\left(\frac{1}{13}a+\frac{5}{13}a^2,\frac{2}{13}a-\frac{3}{13}a^2\right)\right\}}$

16.2 d) ..... $\boxed{(a-2a^2,a+a^2)}$

16.3 a) ..... $\boxed{\{(1+z,-z,z);z\in\mathbb{R}\}}$

16.3 b) ..... $\boxed{\{(1,y,3+2y);y\in\mathbb{R}\}}$

16.3 c) ..... $\boxed{\left\{\left(\frac{13}{6}-\frac{5}{3}z,-\frac{1}{3}+\frac{4}{3}z,z\right);z\in\mathbb{R}\right\}}$

16.3 d) ..... $\boxed{\left\{\left(x,\frac{-5}{12}-\frac{3}{2}x,\frac{-25}{24}-\frac{7}{4}x\right);x\in\mathbb{R}\right\}}$

16.4 a) ..... $\boxed{\{(2,-1,3)\}}$

16.4 b) ..... $\boxed{\{(-1,4,2)\}}$

16.4 c) ..... $\boxed{\varnothing}$

16.4 d) ..... $\boxed{\left\{\left(-\frac{2}{7}-z,\frac{-3}{7},z\right);z\in\mathbb{R}\right\}}$

16.5 a) ..... $\boxed{\left\{\left(1,\frac{1}{2},\frac{1}{2}\right)\right\}}$

16.5 b) ..... $\boxed{\varnothing}$

16.5 c) ..... $\boxed{\{(5z,1-4z,z)\ ;\ z\in\mathbb{R}\}}$

16.5 d) ..... $\boxed{\left\{\left(1,\frac{1}{a+2},\frac{1}{a+2}\right)\right\}}$

16.6 a) ..... $\boxed{\{(5,3,-1)\}}$

16.6 b) ..... $\boxed{\varnothing}$

16.6 c) .. $\boxed{\left\{\left(\frac{a^2+a-1}{a^3-1}c,\frac{a^2-a-1}{a^3-1}c,\frac{-a^2+a+1}{a^3-1}c\right)\right\}}$

16.7 a) ..... $\boxed{\{(0,0,0)\}}$

16.7 b) ..... $\boxed{\{(x,y,-x-y)\ ;\ (x,y)\in\mathbb{R}^2\}}$

16.7 c) ..... $\boxed{\{(z,z,z)\ ;\ z\in\mathbb{R}\}}$

Corrigés

16.1 a)

$$\left\{\begin{array}{l}x-2y=1\\3x+4y=13\end{array}\right.\underset{L_2\leftarrow L_2-3L_1}{\Leftrightarrow}\left\{\begin{array}{rl}x-2y&=1\\10y&=10\end{array}\right.\Leftrightarrow\left\{\begin{array}{l}x=1+2\times1\\y=1\end{array}\right.\Leftrightarrow\left\{\begin{array}{l}y=1\\x=3\end{array}\right.$$

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16.1 b) $\left\{\begin{array}{l}2x+y=16\\x-y=5\end{array}\right.\underset{L_1\leftarrow L_1+L_2}{\Leftrightarrow}\left\{\begin{array}{l}3x=21\\x-y=5\end{array}\right.\Leftrightarrow\left\{\begin{array}{l}x=7\\y=7-5=2\end{array}\right.$

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16.1 c) $\left\{\begin{array}{l}3x-6y=-3\\2x+2y=2\end{array}\right.\Leftrightarrow\left\{\begin{array}{l}x-2y=-1\\x+\ y=1\end{array}\right.\underset{L_2\leftarrow L_2-L_1}{\Leftrightarrow}\left\{\begin{array}{rl}x-2y&=-1\\3y&=2\end{array}\right.\Leftrightarrow\left\{\begin{array}{l}x=-1+2\times\frac{2}{3}=\frac{1}{3}\\y=\frac{2}{3}\end{array}\right.$

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16.1 d)

$$\left\{\begin{array}{l}3x-4y=-\sqrt{2}\\6x+2y=3\sqrt{2}\end{array}\right.\underset{L_2\leftarrow L_2-2L_1}{\Leftrightarrow}\left\{\begin{array}{rl}3x-4y&=-\sqrt{2}\\10y&=5\sqrt{2}\end{array}\right.\Leftrightarrow\left\{\begin{array}{l}3x=4\times\frac{\sqrt{2}}{2}-\sqrt{2}\\y=\frac{\sqrt{2}}{2}\end{array}\right.\Leftrightarrow\left\{\begin{array}{l}x=\frac{\sqrt{2}}{3}\\y=\frac{\sqrt{2}}{2}\end{array}\right.$$

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