Déterminer les primitives pour chacune des fonctions suivantes

1) $\int \frac{2x+3}{2x+1}\,dx$

2) $\int (x+1)^2\,dx$

3) $\int \frac{1}{3+2x}\,dx$

4) $\int \frac{x}{\sqrt{x^2+1}}\,dx$

5) $\int \frac{\sqrt{x}+\ln(x)}{x}\,dx$

6) $\int \frac{x}{x^2+1}\,dx$

7) $\int \frac{x}{x^2-5}\,dx$

8) $\int \frac{x}{2x^2+3}\,dx$

9) $\int \frac{x}{\sqrt{1-x^4}}\,dx$

10) $\int \frac{x^2}{1+x^6}\,dx$

11) $\int e^{-2x}\,dx$

12) $\int (e^x - e^{-x})\,dx$

13) $\int x\,e^{x^2+1}\,dx$

14) $\int x\,7^{x^2}\,dx$

15) $\int \frac{e^x-1}{e^x}\,dx$

16) $\int \frac{e^x}{e^x-1}\,dx$

17) $\int \cos(5x)\,dx$

18) $\int \frac{x}{\cos^2(x^2)}\,dx$

19) $\int \mathrm{tg}(x)\,dx$

20) $\int x\,e^{-x^2}\,dx$

21) $\int \frac{1-\sin(x)}{x+\cos(x)}\,dx$

22) $\int \cos(x)\,e^{\sin(x)}\,dx$

23) $\int \sin(x)\,e^{\cos(x)}\,dx$

24) $\int (x^2+x)\left(2x^3+3x^2+5\right)^6\,dx$

25) $\int 3\sin(3x)\,dx$

26) $\int \frac{1}{1+(4x+2)^2}\,dx$

27) $\int x\sin(x)\cos^2(x)\,dx$

28) $\int x\,(x-3)^7\,dx$

29) $\int 2x\cos(x)\,dx$

30) $\int \frac{3x}{\sqrt{3+x}}\,dx$

31) $\int -\frac{x^2}{\left(1+x^2\right)^2}\,dx$

32) $\int \left(2x^2-x\right)\left(4x^3-3x^2-7\right)^4\,dx$

33) $\int \frac{1}{\sqrt{1-9x^2}}\,dx$

34) $\int \frac{\text{Arccotg}^2(x)}{1+x^2}\,dx$

■ Solutions

1) $\int \frac{2x+3}{2x+1}\,dx = x + \ln(|2x+1|) + k$

2) $\int (x+1)^2\,dx = \frac{1}{3}(x+1)^3 + k$

3) $\int \frac{1}{3+2x}\,dx = \frac{\ln(|2x+3|)}{2} + k$

4) $\int \frac{x}{\sqrt{x^2+1}}\,dx = \sqrt{x^2+1} + k$

5) $\int \frac{\sqrt{x}+\ln(x)}{x}\,dx = \frac{\ln^2(x)}{2} + 2\sqrt{x} + k$

6) $\int \frac{x}{x^2+1}\,dx = \frac{\ln(|x^2+1|)}{2} + k$

7) $\int \frac{x}{x^2-5}\,dx = \frac{\ln(|x^2-5|)}{2} + k$

8) $\int \frac{x}{2x^2+3}\,dx = \frac{\ln(|2x^2+3|)}{4} + k$

9) $\int \frac{x}{\sqrt{1-x^4}}\,dx = \frac{\text{Arcsin}(x^2)}{2} + k$

10) $\int \frac{x^2}{1+x^6}\,dx = \frac{\text{Arctg}(x^3)}{3} + k$

11) $\int e^{-2x}\,dx = -\frac{1}{2}e^{-2x} + k$

12) $\int (e^x - e^{-x})\,dx = e^{-x} + e^x + k$

13) $\int x\,e^{x^2+1}\,dx = \frac{e^{x^2+1}}{2} + k$

14) $\int x\,7^{x^2}\,dx = \frac{7^{x^2}}{\ln(49)} + k$

15) $\int \frac{e^x-1}{e^x}\,dx = x + e^{-x} + k$

16) $\int \frac{e^x}{e^x-1}\,dx = \ln(|1-e^x|) + k$

17) $\int \cos(5x)\,dx = \frac{1}{5}\sin(5x) + k$

18) $\int \frac{x}{\cos^2(x^2)}\,dx = \frac{\text{tg}(x^2)}{2} + k$

19) $\int \text{tg}(x)\,dx = -\ln(|\cos(x)|) + k$

20) $\int x\,e^{-x^2}\,dx = -\frac{e^{-x^2}}{2} + k$

21) $\int \frac{1-\sin(x)}{x+\cos(x)}\,dx = \ln(|x+\cos(x)|) + k$

22) $\int \cos(x)\, e^{\sin(x)}\,dx = e^{\sin(x)} + k$

23) $\int \sin(x)\, e^{\cos(x)}\,dx = -e^{\cos(x)} + k$

24) $\int (x^2+x)\left(2x^3+3x^2+5\right)^6\,dx = \frac{1}{42}\left(2x^3+3x^2+5\right)^7 + k$

25) $\int 3\sin(3x)\,dx = -\cos(3x) + k$

26) $\int \frac{1}{1+(4x+2)^2}\,dx = \frac{1}{4}\,\text{Arctg}(4x+2) + k$

27) $\int x\sin(x)\cos^2(x)\,dx = \frac{1}{36}\left(-9x\cos(x) - 3x\cos(3x) + 9\sin(x) + \sin(3x)\right) + k$

28) $\int x(x-3)^7\,dx = \frac{1}{9}(x-3)^9 + \frac{3}{8}(x-3)^8 + k$

29) $\int 2x\cos(x)\,dx = 2(\cos(x) + x\sin(x)) + k$

30) $\int \frac{3x}{\sqrt{3+x}}\,dx = 2(x-6)\sqrt{x+3} + k$

31) $\int -\frac{x^2}{\left(1+x^2\right)^2}\,dx = \frac{x}{2\left(x^2+1\right)} - \frac{\text{Arctg}(x)}{2} + k$

32) $\int \left(2x^2-x\right)\left(4x^3-3x^2-7\right)^4\,dx = \frac{1}{30}\left(4x^3-3x^2-7\right)^5 + k$

33) $\int \frac{1}{\sqrt{1-9x^2}}\,dx = \frac{1}{3}\,\text{Arcsin}(3x) + k$

34) $\int \frac{\text{Arccotg}^2(x)}{1+x^2}\,dx = -\frac{\text{Arccotg}^3(x)}{3} + k$