

Déterminez F une primitive de f .

Réponses

1) $f(x) = \frac{5}{3}x^4 - \frac{3}{4}x^2 + 1$

$$F(x) = \frac{1}{3}x^5 - \frac{1}{4}x^3 + x$$

2) $f(x) = x^3 - 5x^2 + 3x - 2$

$$F(x) = \frac{1}{4}x^4 - \frac{5}{3}x^3 + \frac{3}{2}x^2 - 2x$$

3) $f(x) = (x+1)^2$

$$F(x) = \frac{1}{3}(x+1)^3$$

4) $f(x) = (2x+1)^3$

$$F(x) = \frac{1}{8}(2x+1)^4$$

5) $f(x) = (2-x)^{12}$

$$F(x) = -\frac{1}{13}(2-x)^{13}$$

6) $f(x) = 6x(3x^2+1)^2$

$$F(x) = \frac{1}{3}(3x^2+1)^3$$

7) $f(x) = (2x-3)(x^2-3x+1)^5$

$$F(x) = \frac{1}{6}(x^2-3x+1)^6$$

8) $f(x) = 6x(1-x^2)^3$

$$F(x) = -\frac{3}{4}(1-x^2)^4$$

9) $f(x) = (1-2x)^2$

$$F(x) = -\frac{1}{6}(1-2x)^3$$

10) $f(x) = 2x + 1 - \frac{1}{x^2}$

$$F(x) = x^2 + x + \frac{1}{x}$$

11) $f(x) = \frac{1}{(x-1)^2}$

$$F(x) = \frac{1}{1-x}$$

12) $f(x) = -\frac{4}{x^4} - \frac{1}{x^3} + \frac{3}{x^5}$

$$F(x) = \frac{4}{3x^3} + \frac{1}{2x^2} - \frac{3}{4x^4}$$

13) $f(x) = \frac{x^3-3}{x^2}$

$$F(x) = \frac{x^2}{2} + \frac{3}{x}$$

14) $f(x) = \frac{3x^2}{(1+2x^3)^2}$

$$F(x) = \frac{-1}{2(1+2x^3)}$$

$$15) f(x) = \frac{2}{x^3} + \frac{1}{2x^2}$$

$$F(x) = -\frac{1}{x^2} - \frac{1}{2x}$$

$$16) f(x) = (3x+2)^6$$

$$F(x) = \frac{1}{21}(3x+2)^7$$

$$17) f(x) = (16x-10)(4x^2-5x)^2$$

$$F(x) = \frac{2}{3}(4x^2-5x)^3$$

$$18) f(x) = \frac{2x+1}{(x^2+x+3)^2}$$

$$F(x) = -\frac{1}{x^2+x+3}$$

$$19) f(x) = x\sqrt{x}$$

$$F(x) = \frac{2}{5}\sqrt{x^5} = \frac{2}{5}x^2\sqrt{x}$$

$$20) f(x) = \frac{1}{\sqrt[3]{x}}$$

$$F(x) = \frac{3}{2}\sqrt[3]{x^2}$$

$$21) f(x) = x\sqrt{x^2+1}$$

$$F(x) = \frac{1}{3}\sqrt{(x^2+1)^3} = \frac{1}{3}(x^2+1)\sqrt{x^2+1}$$

$$22) f(x) = \sqrt{x} - \frac{1}{\sqrt{x}}$$

$$F(x) = \frac{2}{3}\sqrt{x^3} - 2\sqrt{x} = \frac{2}{3}x\sqrt{x} - 2\sqrt{x}$$

$$23) f(x) = \sqrt[3]{x} + \frac{1}{\sqrt[3]{x}}$$

$$F(x) = \frac{3}{4}\sqrt[3]{x^4} + \frac{3}{2}\sqrt[3]{x^2} = \frac{3}{4}x\sqrt[3]{x} + \frac{3}{2}\sqrt[3]{x^2}$$

$$24) f(x) = 2\sqrt{x} + \sqrt{2x}$$

$$F(x) = \frac{4}{3}x\sqrt{x} + \frac{2}{3}x\sqrt{2x}$$

$$25) f(x) = x\sqrt[3]{ax^2+b}, \quad a \neq 0$$

$$F(x) = \frac{3}{8a}\sqrt[3]{(ax^2+b)^4} = \frac{3}{8a}(ax^2+b)\sqrt[3]{ax^2+b}$$

$$26) f(x) = \frac{2x+1}{\sqrt{x^2+x+1}}$$

$$F(x) = 2\sqrt{x^2+x+1}$$

$$27) f(x) = \frac{3x^2}{\sqrt{9+x^3}}$$

$$F(x) = 2\sqrt{9+x^3}$$

$$28) f(x) = \frac{3x^2}{\sqrt{5x^3+8}}$$

$$F(x) = \frac{2}{5}\sqrt{5x^3+8}$$

$$29) f(x) = (3x^2+1)\sqrt{x^3+x+2}$$

$$F(x) = \frac{2}{3}\sqrt{(x^3+x+2)^3} = \frac{2}{3}(x^3+x+2)\sqrt{x^3+x+2}$$

$$30) f(x) = (x + 2\sqrt{x})^2$$

$$F(x) = \frac{1}{3}x^3 + 2x^2 + \frac{8}{5}\sqrt{x^5}$$

$$31) f(x) = \cos(x) \cdot \sqrt{\sin(x)}$$

$$F(x) = \frac{2}{3} \sqrt{(\sin(x))^3} = \frac{2}{3} \sin(x) \cdot \sqrt{\sin(x)}$$

$$32) f(x) = \sin(3x)$$

$$F(x) = -\frac{1}{3} \cos(3x)$$

$$33) f(x) = 1 + \tan^2(2x)$$

$$F(x) = \frac{1}{2} \tan(2x)$$

$$34) f(x) = 2\sin(x) + 3\cos(x)$$

$$F(x) = 3\sin(x) - 2\cos(x)$$

$$35) f(x) = \tan^2(x)$$

$$F(x) = \tan(x) - x$$

$$36) f(x) = \frac{1}{2} \cos(4x)$$

$$F(x) = \frac{1}{8} \sin(4x)$$

$$37) f(x) = \sin^5(x) \cdot \cos(x)$$

$$F(x) = \frac{1}{6} \sin^6(x)$$

$$38) f(x) = \sin(x) \cdot \cos^4(x)$$

$$F(x) = -\frac{1}{5} \cos^5(x)$$

$$39) f(x) = \cos^2\left(\frac{x}{2}\right) \cdot \sin\left(\frac{x}{2}\right)$$

$$F(x) = -\frac{2}{3} \cos^3\left(\frac{x}{2}\right)$$

$$40) f(x) = \sin(x)(1 - \cos(x))$$

$$F(x) = \frac{1}{2}(1 - \cos(x))^2$$

$$41) f(x) = \frac{\sin(x)}{(1 + \cos(x))^2}$$

$$F(x) = \frac{1}{1 + \cos(x)}$$

$$42) f(x) = \cos(x) - \sin^2(x) \cdot \cos(x)$$

$$F(x) = \sin(x) - \frac{1}{3} \sin^3(x)$$

$$43) f(x) = \frac{\cos(x)}{(4\sin(x) - 1)^3}$$

$$F(x) = \frac{-1}{8(4\sin(x) - 1)^2}$$

$$44) f(x) = \frac{1}{2x-5}$$

$$F(x) = \frac{1}{2} \ln(|2x-5|)$$

$$45) f(x) = \frac{x-1}{x^2-2x+4}$$

$$F(x) = \frac{\ln(|x^2-2x+4|)}{2}$$

$$46) f(x) = \frac{(x+1)^2}{x}$$

$$F(x) = \frac{x^2}{2} + 2x + \ln(|x|)$$

$$47) f(x) = \frac{3x}{x^2+1}$$

$$F(x) = \frac{3 \cdot \ln(x^2+1)}{2}$$

$$48) f(x) = \frac{1}{x} \ln(|x|)$$

$$F(x) = \frac{\ln^2(|x|)}{2}$$

$$49) f(x) = \frac{2x-1}{x^2-x-2}$$

$$F(x) = \ln(|x^2-x-2|)$$

$$50) f(x) = \frac{x}{x^2-4}$$

$$F(x) = \frac{\ln(|x^2-4|)}{2}$$

$$51) f(x) = \frac{1}{x \cdot \ln(|x|)}$$

$$F(x) = \ln(|\ln(|x|)|)$$

$$52) f(x) = \frac{-\sin(x)}{\cos(x)}$$

$$F(x) = \ln(|\cos(x)|)$$

$$53) f(x) = \frac{4x+2}{x^2+x+1}$$

$$F(x) = 2 \ln(|x^2+x+1|)$$

$$54) f(x) = x \cdot e^{x^2}$$

$$F(x) = \frac{1}{2} e^{x^2}$$

$$55) f(x) = \frac{e^{\frac{1}{x}}}{x^2}$$

$$F(x) = -e^{\frac{1}{x}}$$

$$56) f(x) = x^2 \cdot e^{x^3}$$

$$F(x) = \frac{1}{3} e^{x^3}$$

$$57) f(x) = \frac{e^{\sqrt{2x}}}{\sqrt{2x}}$$

$$F(x) = e^{\sqrt{2x}}$$