Cálculo A
Integral indefinida

Encontre a integral indefinida das funções a seguir

1. $f(x) = 12x^2 + 6x - 5$

2. $f(x) = x^3 - 4x^2 + 17$

3. $f(x) = 6x^9 - 4x^7 + 3x^2 + 1$

4. $f(x) = x^{99} - 2x^{49} - 1$

5. $f(x) = \sqrt{x} + \sqrt[3]{x}$

6. $f(x) = \sqrt[3]{x^2} - \sqrt{x^3}$

7. $f(x) = \dfrac{6}{x^5}$

8. $f(x) = \dfrac{3}{x^2} - \dfrac{5}{x^4}$

9. $f(x) = \sqrt{x} + \dfrac{1}{\sqrt{x}}$

10. $f(x) = x^{2/3} + 2x^{-1/3}$

11. $g(t) = \dfrac{t^3 + 2t^2}{\sqrt{t}}$

12. $g(t) = \sqrt[5]{t^4} + t^{-6}$

13. $h(x) = \sin x - 2\cos x$

14. $f(t) = \sin t - 2\sqrt{t}$

15. $f(t) = \sec^2 t + t^2$

16. $f(\theta) = \theta + \sec\theta \ \tan\theta$

17. $f(\theta) = \csc^2\theta - \csc\theta \ \cot\theta$

18. $f(x) = \dfrac{1}{1+x^2}$

19. $f(x) = \dfrac{1}{\sqrt{1-x^2}}$

20. $f(x) = e^x + \dfrac{2}{x}$

Determine $f(x)$ nos exercícios as seguir

21. $f'(x) = x^4 - 2x^2 + x - 1$

22. $f'(x) = \sin x - \sqrt[5]{x^2}$

23. $f'(x) = 4x + 3; \ f(0) = -9$

24. $f'(x) = 12x^2 - 24x + 1; \ f(1) = -2$

25. $f'(x) = 3\sqrt{x} - \dfrac{1}{\sqrt{x}}; f(1) = 2$

26. $f'(x) = 1 + \dfrac{1}{x^2}, \, x > 0; \ f(1) = 1$

27. $f'(x) = 3\cos x + 5\sin x; \ f(0) = 4$

28. $f'(x) = \sin x - 2\sqrt{x}; \ f(0) = 0$

29. $f'(x) = 2 + \sqrt[5]{x^3}; \ f(1) = 3$

30. $f'(x) = 3x^{-2}; \ f(1) = 0$

Respostas

I) 1. $F(x) = 4x^3 + 3x^2 - 5x + C$

2. $F(x) = \dfrac{x^4}{4} - \dfrac{4x^3}{3} + 17x + C$

3. $F(x) = \dfrac{3}{5}x^{10} - \dfrac{x^8}{2} + x^3 + x + C$

4. $F(x) = \dfrac{x^{100}}{100} - \dfrac{x^{50}}{25} - x + C$

5. $F(x) = \dfrac{2}{3}x^{3/2} + \dfrac{3}{4}x^{4/3} + C$

6. $F(x) = \dfrac{3}{5}x^{5/3} - \dfrac{3}{4}x^{4/3} + C$

7. $F(x) = -\dfrac{3}{2}x^{-4} + C$

8. $F(x) = -\dfrac{3}{x} + \dfrac{5}{3x^3} + C$

9. $F(x) = \dfrac{2}{3}x^{3/2} + 2x^{1/2} + C$

10. $F(x) = \dfrac{3}{5}x^{\frac{5}{3}} + 3x^{\frac{2}{3}} + C$

11. $G(x) = \dfrac{2}{7}x^{\frac{7}{2}} + \dfrac{4}{5}x^{\frac{5}{2}} + C$

12. $G(x) = \dfrac{5}{9}x^{\frac{9}{5}} - \dfrac{1}{5}x^{-5} + C$

13. $H(x) = -\cos x - 2\sin x + C$

14. $F(x) = -\cos t - \dfrac{4}{3}t^{\frac{3}{2}} + C$

15. $F(t) = tg\, t + \dfrac{t^3}{3} + C$

16. $F(\theta) = \dfrac{\theta^2}{2} + \sec\theta + C$

17. $F(\theta) = -\cotg\,\theta + \cosec\,\theta + C$

18. $F(x) = arc\,tg\,x + C \overset{ou}{=} -arc\,cotg\,x + D$

19. $F(x) = arc\,\sin x + C \overset{ou}{=} -arc\,\cos x + D$

20. $F(x) = e^x + 2\ln x + C$

21. $f(x) = \dfrac{x^5}{5} - \dfrac{2}{3}x^3 + \dfrac{x^2}{2} - x + C$

22. $f(x) = -\cos x - \dfrac{5}{7}x^{7/5} + C$

23. $f(x) = 2x^2 + 3x - 9$

24. $f(x) = 4x^3 - 12x^2 + x + 5$

25. $f(x) = 2x^{3/2} - 2x^{1/2} + 2$

26. $f(x) = x - \dfrac{1}{x} + 1$

27. $f(x) = 3\sin x - 5\cos x + 9$

28. $f(x) = -\cos x - \dfrac{4}{3}x^{3/2} + 1$

29. $f(x) = 2x + \dfrac{5}{8} x^{\frac{8}{5}} + \dfrac{3}{8}$

30. $f(x) = -\dfrac{3}{x} + 3$