Cálculo Diferencial - Actividad 5

Resolver los siguientes ejercicios de forma analítica y comprobar los resultados con MAPLE.

Hallar la derivada de las siguientes funciones:

1. $y = x^3$

2. $y = ax^4 - bx^2$

3. $y = x^{\frac{4}{3}} + 5$

4. $y = \frac{3x^3}{\sqrt[5]{x^2}} - \frac{7x}{\sqrt[3]{x^4}} + 8\sqrt[7]{x^3}$

5. $y = \left(x^2 - 3\right)^5$

6. $y = \sqrt{a^2 + x^2}$

7. $y = \left(3x^2 + 2\right)\sqrt{1 + 5x^2}$

8. $y = \frac{a^2 + x^2}{\sqrt{a^2 - x^2}}$

9. $y = 3x^4 - 2x^2 + 8$

10. $y = 4 = 3x - 2x^3$

11. $s = at^5 - 5bt^3$

12. $w = \frac{z^2}{2} - \frac{z^7}{7}$

13. $w = \sqrt{v}$

14. $y = \frac{2}{x} - \frac{3}{x^2}$

15. $s = 2t^{\frac{4}{3}} - 3t^{\frac{2}{3}}$

16. $y = 2x^{\frac{3}{4}} + 4x^{-\frac{1}{4}}$

17. $y = x^{\frac{2}{3}} - a^{\frac{2}{3}}$

18. $y = \frac{a + bx + cx^2}{x}$

19. $y = \frac{\sqrt{x}}{2} - \frac{2}{\sqrt{x}}$

20. $s = \frac{a + bt + ct^2}{\sqrt{t}}$

21. $y = \sqrt{ax} + \frac{a}{\sqrt{ax}}$

22. $r = \sqrt{1 - 2\theta}$

23. $s = \left(2 - 3t^2\right)^3$

24. $y = \sqrt[3]{4 - 9x}$

25. $y = \frac{1}{\sqrt{a^2 - x^2}}$

26. $r = \left(2 - 3t^2\right)^3$

27. $y = \left(a - \frac{b}{x}\right)^2$

28. $y = \left(a + \frac{b}{x^2}\right)^3$

29. $y = x\sqrt{a + bx}$

30. $s = t\sqrt{a^2 + t^2}$

31. $y = \frac{a - x}{a + x}$

32. $y = \frac{a^2 + x^2}{a^2 - x^2}$

33. $y = \frac{\sqrt{a^2 + x^2}}{x}$

34. $y = \frac{x}{\sqrt{a^2 - x^2}}$

35. $r = \theta^2\sqrt{3 - 4\theta}$

36. $y = \sqrt{\frac{1 - cx}{1 + cx}}$

37. $y = \sqrt{\frac{a^2 + x^2}{a^2 - x^2}}$

38. $s = \sqrt[3]{\frac{2 + 3t}{2 - 3t}}$

39. $y = \sqrt{2px}$

40. $y = \frac{b}{a}\sqrt{a^2 - x^2}$

41. $y = \left(a^{\frac{2}{3}} - x^{\frac{2}{3}}\right)^{\frac{3}{2}}$

42. $y = \sqrt{2x} + \sqrt[3]{3x}$

43. $y = \frac{2 - x}{1 + 2x^2}$

44. $y = \frac{x}{\sqrt{a - bx}}$

45. $s = \frac{\sqrt{a + bt}}{t}$

46. $r = \frac{\sqrt[3]{a + b\theta}}{\theta}$

47. $y = x^2\sqrt{5 - 2x}$

48. $y = x\sqrt[3]{2 + 3x}$

49. $s = \sqrt{2t - \frac{1}{t^2}}$

50. $y = (x + 2)^2\sqrt{x^2 + 2}$