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

$= \dfrac{sen\ x - 2x\ cos\ x}{2\sqrt{x}\ sen^2\ x}$

Página 15

20. $f'(x) = 4\ (x^2 - 1)^3 \cdot 2x = 8x\ (x^2 - 1)^3$

21. $f'(x) = 3\left(\dfrac{x-1}{x+2}\right)^2 \cdot \dfrac{3}{(x+2)^2} = \dfrac{9\ (x-1)^2}{(x+2)^4}$

22. $f'(x) = \dfrac{2\ (x+1)^2 - (2x-1)\cdot 2\ (x+1)}{(x+1)^4} =$

$= \dfrac{(x+1)\cdot(2x+2-4x+2)}{(x+1)^4} = \dfrac{-2x+4}{(x+1)^3}$

23. $f'(x) = \dfrac{(x-1)^3 - (x+1)\cdot 3\ (x-1)^2}{(x-1)^6} =$

$= \dfrac{(x-1)^2\ (x-1-3x-3)}{(x-1)^6} = \dfrac{-2x-4}{(x-1)^4}$

24. $f'(x) = \dfrac{1}{\frac{x-1}{x+4}} \cdot \dfrac{5}{(x+4)^2} = \dfrac{(x+4)}{(x-1)} \cdot \dfrac{5}{(x+4)^2} =$

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

25. $f'(x) = 2\ cos\ (3x-2)\cdot(-sen\ (3x-2))\cdot 3 =$

$= -6\ cos\ (3x-2)\ sen\ (3x-2)$

26. $f'(x) = \dfrac{cos\ x}{2\sqrt{sen\ x}}$

27. $f'(x) = \dfrac{2x\ cos\ x^2}{sen\ x^2}$

28. $f'(x) = e^{4x-1}\cdot 4\ sen(3x^2) + e^{4x-1}\cdot cos(3x^2)\ 6x =$

$= 4\ e^{4x-1}\ sen\ (3x^2) + 6x\ e^{4x-1}\ cos\ (3x^2)$

29. $f'(x) = 2^{4x^2-1}\cdot ln\ 2\cdot 8x\cdot ln\ (8x) + 2^{4x^2-1}\cdot\dfrac{8}{8x} =$

$= 2^{4x^2-1}\cdot ln\ 2\cdot 8x\cdot ln\ (8x) + \dfrac{2^{4x^2-1}}{x}$

30. $f'(x) = \dfrac{2\ (2x+3)\cdot 2\ (1-x) - (2x+3)^2\cdot(-1)}{(1-x)^2} =$

$= \dfrac{(2x+3)\ (-2x+7)}{(1-x)^2} = \dfrac{-4x^2+8x+21}{(1-x)^2}$

31. $f'(x) = \left[1 + tg^2\left(\dfrac{2}{x-3}\right)\right]\cdot\dfrac{-2}{(x-3)^2}$

32. $f'(x) = \dfrac{e^{5x+1}\cdot 5\cdot(x+2) - e^{5x+1}\cdot 1}{(x+2)^2} =$

$= \dfrac{e^{5x+1}\ (5x+9)}{(x+2)^2}$

33. $f'(x) = \dfrac{2\ ln\ x\cdot\frac{1}{x}\cdot x - ln^2\ x\cdot 1}{x^2} = \dfrac{2\ ln\ x}$

34. $f'(x) = \dfrac{(e^x + x\ e^x)\ (x+2) - x\ e^x}{(x+2)^2} =$

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

35. $f'(x) = \dfrac{\frac{1}{2\sqrt{x-1}}\cdot(3x+4) - \sqrt{x-1}\cdot 3}{(3x+4)^2}$

$= \dfrac{-3x+2}{2\sqrt{x-1}\ (3x+4)^2}$

36. $f'(x) = \dfrac{1}{2\sqrt{\frac{3x+1}{x+2}}} \cdot \dfrac{3\ (x+2) - (3x+}{(x+2)^2}$

$= \dfrac{\sqrt{x+2}}{2\sqrt{3x+1}} \cdot \dfrac{5}{(x+2)^2}$

37. $f'(x) = \dfrac{(x-2)\ cos\ x - sen\ x}{(x-2)^2}$

38. $f'(x) = \dfrac{11}{6x^2+5x-4}$

39. $f'(x) = \dfrac{-x-3}{2\sqrt{x+2}\cdot(x+1)^2}$

40. $f'(x) = \dfrac{\frac{1}{2\sqrt{x}}(x^2-1) + \sqrt{x}\cdot 2x}{5} =$

$= \dfrac{x^2-1+4x^2}{10\sqrt{x}} = \dfrac{5x^2-1}{10\sqrt{x}}$