REGLAS DE DERIVACIÓN

$$\frac{d[k]}{dx} = 0$$

$$\frac{d[kx]}{dx} = k$$

$$\frac{d[kf(x)]}{dx} = kf'(x)$$

$$\frac{d[f(x) + g(x)]}{dx} = f'(x) \pm g'(x)$$

$$\frac{d[f(x) \cdot g(x)]}{dx} = f(x)g'(x) + g(x)f'(x)$$

$$\frac{d}{dx}\left[\frac{f(x)}{g(x)}\right] = \frac{g(x)f'(x) - f(x)g'(x)}{g(x)^2}$$

$$\frac{d[x^n]}{dx} = nx^{n-1}$$

$$\frac{d[\sin x]}{dx} = \cos x$$

$$\frac{d[\cos x]}{dx} = -\sin x$$

$$\frac{d[\tan x]}{dx} = \sec^2 x$$

$$\frac{d[\sec x]}{dx} = \sec x \cdot \tan x$$

$$\frac{d[\cot x]}{dx} = -\csc^2 x$$

$$\frac{d[\csc x]}{dx} = -\csc x \cdot \cot x$$

$$\frac{d[v^n]}{dx} = nv^{n-1}v'$$

$$\frac{d}{dx}[f(v)] = f'(v)v'$$

EJERCICIOS

En los ejercicios 7 a 36, encontrar la derivada de la función.

7. $y = (4x - 1)^3$

8. $y = 2(6 - x^2)^5$

9. $g(x) = 3(4 - 9x)^4$

10. $f(t) = (9t + 2)^{2/3}$

11. $f(t) = \sqrt{5 - t}$

12. $g(x) = \sqrt{9 - 4x}$

13. $y = \sqrt[3]{6x^2 + 1}$

14. $g(x) = \sqrt{x^2 - 2x + 1}$

15. $y = 2\sqrt[4]{9 - x^2}$

16. $f(x) = -3\sqrt[4]{2 - 9x}$

17. $y = \dfrac{1}{x - 2}$

18. $s(t) = \dfrac{1}{t^2 + 3t - 1}$

19. $f(t) = \left(\dfrac{1}{t - 3}\right)^2$

20. $y = -\dfrac{5}{(t + 3)^3}$

21. $y = \dfrac{1}{\sqrt{x+2}}$ **22.** $g(t) = \sqrt{\dfrac{1}{t^2-2}}$

23. $f(x) = x^2(x-2)^4$ **24.** $f(x) = x(3x-9)^3$

25. $y = x\sqrt{1-x^2}$ **26.** $y = \frac{1}{2}x^2\sqrt{16-x^2}$

27. $y = \dfrac{x}{\sqrt{x^2+1}}$ **28.** $y = \dfrac{x}{\sqrt{x^4+4}}$

29. $g(x) = \left(\dfrac{x+5}{x^2+2}\right)^2$ **30.** $h(t) = \left(\dfrac{t^2}{t^3+2}\right)^2$

31. $f(v) = \left(\dfrac{1-2v}{1+v}\right)^3$ **32.** $g(x) = \left(\dfrac{3x^2-2}{2x+3}\right)^3$

33. $f(x) = ((x^2+3)^5 + x)^2$ **34.** $g(x) = (2 + (x^2+1)^4)^3$

35. $f(x) = \sqrt{2+\sqrt{2+\sqrt{x}}}$ **36.** $g(t) = \sqrt{\sqrt{t+1}+1}$

En los problemas 21-38, encuentre $f'(x)$.

21. $f(x) = x^3 \cos x^3$ **22.** $f(x) = \dfrac{\operatorname{sen} 5x}{\cos 6x}$

23. $f(x) = (2 + x \operatorname{sen} 3x)^{10}$ **24.** $f(x) = \dfrac{(1-\cos 4x)^2}{(1+\operatorname{sen} 5x)^3}$

25. $f(x) = \tan(1/x)$ **26.** $f(x) = x\cot(5/x^2)$

27. $f(x) = \operatorname{sen} 2x \cos 3x$ **28.** $f(x) = \operatorname{sen}^2 2x \cos^3 3x$

29. $f(x) = (\sec 4x + \tan 2x)^5$ **30.** $f(x) = \csc^2 2x - \csc 2x^2$

31. $f(x) = \operatorname{sen}(\operatorname{sen} 2x)$ **32.** $f(x) = \tan\left(\cos\dfrac{x}{2}\right)$

33. $f(x) = \cos\left(\operatorname{sen}\sqrt{2x+5}\right)$ **34.** $f(x) = \tan(\tan x)$

35. $f(x) = \operatorname{sen}^3(4x^2-1)$ **36.** $f(x) = \sec(\tan^2 x^4)$

37. $f(x) = (1 + (1 + (1 + x^3)^4)^5)^6$

38. $f(x) = \left[x^2 - \left(1 + \dfrac{1}{x}\right)^{-4}\right]^2$