

2. a) $Dx^2 \cos x = x(2 \cos x - x \operatorname{sen} x)$; b) $Dx^2 \operatorname{ctg} x = \frac{x(\operatorname{sen} 2x - x)}{\operatorname{sen}^2 x}$.
3. a) $D(5 \operatorname{sen} x + 3 \cos x) = 5 \cos x - 3 \operatorname{sen} x$; b) $D(\operatorname{tg} x - \operatorname{ctg} x) = \frac{4}{\operatorname{sen}^2 2x}$.
4. a) $D \frac{\cos x}{x^2} = -\frac{x \operatorname{sen} x + 2 \cos x}{x^3}$; b) $D(x \operatorname{sen} x + \cos x) = x \cos x$.
5. a) $D(\operatorname{sen} x \cos x + x) = 2 \cos^2 x$; b) $D \frac{1}{2} (x - \operatorname{sen} x \cos x) = \operatorname{sen}^2 x$.
6. a) $D \operatorname{sen}^2 x = \operatorname{sen} 2x$; b) $D \cos^2 x = -\operatorname{sen} 2x$.
7. a) $D \frac{1}{4} \operatorname{tg}^4 x = \operatorname{tg}^3 x \cdot \sec^2 x$; b) $D \frac{1}{2} \operatorname{tg}^2 x = \frac{\operatorname{tg} x}{\cos^2 x}$.
8. a) $D \operatorname{sen}^3 x \cos x = \operatorname{sen}^2 x (3 \cos^2 x - \operatorname{sen}^2 x)$; b) $D(\operatorname{sen} x \operatorname{tg} x + \cos x) = \frac{\operatorname{tg} x}{\cos x}$.
9. a) $D \left(\cos x - \frac{1}{3} \cos^3 x \right) = -\operatorname{sen}^3 x$; b) $D(3 \operatorname{sen}^4 x - 2 \operatorname{sen}^6 x) = 12 \operatorname{sen}^3 x \cos^3 x$.
10. a) $D \left(\frac{1}{3} \operatorname{tg}^3 x - \operatorname{tg} x + x \right) = \operatorname{tg}^4 x$; b) $D \left(\operatorname{tg} x - \frac{1}{3} \operatorname{tg}^3 x + \frac{1}{5} \operatorname{tg}^5 x \right) = \frac{1 - \operatorname{tg}^2 x + \operatorname{tg}^4 x}{\cos^2 x}$.
11. a) $D \left(\frac{1}{3} \operatorname{tg}^3 x + \operatorname{tg}^2 x + \operatorname{tg} x \right) = (1 + \operatorname{tg} x)^2 (1 + \operatorname{tg}^2 x)$; b) $D \frac{\cos x}{1 - \operatorname{sen} x} = \frac{1}{1 - \operatorname{sen} x}$.
12. a) $D[(x \operatorname{ctg} x)^2] = 2x \operatorname{ctg} x \left(\operatorname{ctg} x - \frac{x}{\operatorname{sen}^2 x} \right)$; b) $D[2x \operatorname{sen} x - (x^2 - 2) \cos x] = x^2 \operatorname{sen} x$.
13. a) $D[(\operatorname{sen} x + \cos x)^2 - 2x] = -4 \operatorname{sen}^2 x$; b) $D[(\operatorname{tg} x - 1) \cos x] = \operatorname{sen} x + \cos x$.
14. a) $D \frac{x}{1 - \cos x} = \frac{1 - \cos x - x \operatorname{sen} x}{(1 - \cos x)^2}$; b) $D \frac{1 - \operatorname{tg} x}{1 + \operatorname{tg} x} = -\frac{2}{(\operatorname{sen} x + \cos x)^2}$.
15. a) $D \left(\frac{4}{3} \operatorname{ctg} x - \frac{\cos x}{3 \operatorname{sen}^3 x} \right) = \frac{\cos 2x}{\operatorname{sen}^4 x}$; b) $D \left(\frac{\operatorname{sen}^2 x}{1 + \operatorname{ctg} x} + \frac{\cos^2 x}{1 + \operatorname{tg} x} \right) = -\cos 2x$.
16. $D \frac{(\operatorname{tg}^2 x - 1)(\operatorname{tg}^4 x + 10 \operatorname{tg}^2 x + 1)}{3 \operatorname{tg}^3 x} = \frac{1}{\operatorname{sen}^4 x \cos^4 x}$.
17. a) $D[x(x^2 - 6) \operatorname{sen} x + 3(x^2 - 2) \cos x] = x^3 \cos x$; b) $D \frac{1 - \cos x}{1 + \cos x} = \operatorname{tg} \frac{x}{2} \cdot \sec^2 \frac{x}{2}$.