

以下で与えられた関数 y を x で微分し、 y' を求めよ。ただし、 a, b, c, \dots は定数とする。

1. $y = (x^2 + 1)^5(3x + 1)^4$

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

3. $y = e^{ax}$

4. $y = e^{-x^2}$

5. $y = \tan x$

6. $y = \sin ax \cos bx$

7. $y = \sin^2 ax$

8. $y = \sin^{-1} x$

9. $y = \cos^{-1} x$

10. $y = \tan^{-1} x$

11. $y = (1 + x^2)e^{-x}$

12. $y = e^{\sin x}$

13. $y = x^x$

14. $y = x^{\sin x}$

15. $y = \sqrt{\sin 2x}$

16. $y = \frac{x^2 - 1}{2} \log(1 - x) - \frac{x}{2} - \frac{x^2}{4}$

17. $y = e^{ax} \cos bx$

18. $y = (\log x)^3$

19. $y = \frac{1}{\sqrt{\log x}}$

20. $y = \sin x^3$

21. $y = e^{\sin^2 ax}$

22. $y = x \log x - x$

23. $y = \log \left| \tan \frac{x}{2} \right|$

24. $y = \frac{1}{2a} \log \left| \frac{x - a}{x + a} \right|$

25. $y = \frac{1}{2}(x\sqrt{x^2 + a} + a \log |x + \sqrt{x^2 + a}|)$

26. $y = \log \left(\frac{\sqrt{1+x} - \sqrt{1-x}}{\sqrt{1+x} + \sqrt{1-x}} \right)$