1. $f(x) = \sin(a + bx)\ (a, b \in \mathbb{R}\ \text{fest})$

2. $f(x) = a \cdot \sin\left(\frac{a}{x}\right)\ (a \in \mathbb{R}\ \text{fest})$

3. $f(x) = \sin(x^n)\ (n \in \mathbb{N}\ \text{fest})$

4. $f(x) = \sin\sqrt{\frac{x}{2}}$

5. $f(x) = 3\sin x - 4\sin^3 x$

6. $f(x) = \sin x - \frac{2}{3}\sin^3 x + \frac{1}{5}\sin^5 x$

7. $f(x) = \frac{3}{\sin^2 x} - \frac{5}{\sin x}$

8. $f(x) = \frac{3}{8}x + \frac{1}{4}\sin(2x) + \frac{1}{32}\sin(4x)$

9. $f(x) = \cos\left(\frac{x^4}{4(x+1)}\right)$

10. $f(x) = \left(\frac{1}{\cos x}\right)^n\ (n \in \mathbb{N}\ \text{fest})$

11. $f(x) = \cos x - \cos^3 x + \frac{3}{5}\cos^5 x - \frac{1}{7}\cos^7 x$

12. $f(x) = \sqrt[5]{(\sin x + \cos x)^3}$

13. $f(x) = \frac{a - b\cos x}{a + b\cos x}\ (a, b \in \mathbb{R}\ \text{fest})$

14. $f(x) = \frac{a \cdot \sin x}{1 + \cos x}\ (a \in \mathbb{R}\ \text{fest})$

15. $f(x) = \frac{1}{2\sin^2 x} - \frac{1}{4\sin^4 x}$

16. $f(x) = \frac{\sin^2 x}{x^2 - 1}$

17. $f(x) = \cos x \cdot \tan x$

18. $f(x) = x^5 \cdot \tan x - 7$

19. $f(x) = \sin x(3\cos^2 x + \sin^2 x)$

20. $f(x) = \cos\sqrt{\sin(6x + 2)}$

21. $f(x) = \sin(\cos(x^3 + 2))$

22. $f(x) = \cos x \cdot \cos(x + b)\ (b \in \mathbb{R}\ \text{fest})$

23. $f(x) = \tan x - \cot x$

24. $f(x) = \sqrt{1 + x^2} \cdot \sin x$

25. $f(x) = (a + b\sqrt{x})\tan x\ (a, b \in \mathbb{R}\ \text{fest})$

26. $f(x) = a \cdot \tan(bx + c)\ (a, b, c \in \mathbb{R}\ \text{fest})$

27. $f(x) = \cot x + \frac{1}{3}\cot^3 x$

28. $f(x) = 3\tan^5 x - 2\tan^4 x - 5\tan^3 x + 4\tan^2 x$

29. $f(x) = \tan\left(\frac{x-2}{x+2}\right)$

30. $f(x) = (x^4 - 3x^2 + 11) \cdot \sin x$

31. $f(x) = \tan^n x\ (n \in \mathbb{N}\ \text{fest})$

32. $f(x) = \sin x \cdot \sin(x - a)$

33. $f(x) = \tan(\sqrt{x} - 3)$

LÖSUNGEN:

1. $f'(x) = b \cdot \cos(a + bx)$

2. $f'(x) = -\frac{a^2}{x^2} \cos\left(\frac{a}{x}\right)$

3. $f'(x) = n \cdot x^{n-1} \cdot \cos\left(x^n\right)$

4. $f'(x) = \frac{\cos\sqrt{\frac{x}{2}}}{2\sqrt{2x}}$

5. $f'(x) = 3\cos x(4\cos^2 x - 3) = 3\cos(3x)$

6. $f'(x) = \cos^5 x$

7. $f'(x) = \frac{\cos x(5\sin x - 6)}{\sin^3 x}$

8. $f'(x) = \cos^4 x$

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

10. $f'(x) = \frac{n \cdot \sin x}{\cos^{n+1} x}$

11. $f'(x) = -\sin^7 x$

12. $f'(x) = \frac{3(\cos x - \sin x)}{5\sqrt[5]{1+\sin(2x)}}$

13. $f'(x) = \frac{2ab\sin x}{(a+b\cos x)^2}$

14. $f'(x) = \frac{a}{1+\cos x}$

15. $f'(x) = \frac{\cos^3 x}{\sin^5 x}$

16. $f'(x) = \frac{(x^2-1)\sin(2x) - 2x\sin^2 x}{(x^2-1)^2}$

17. $f'(x) = \cos x$

18. $f'(x) = x^4\left(5\tan x + \frac{x}{\cos^2 x}\right)$

19. $f'(x) = 3\cos x - \cos(2x)$

20. $f'(x) = \frac{3\cdot\cos(2(3x+1))\cdot\sin\sqrt{\sin(2(3x+1))}}{\sqrt{\sin(2(3x+1))}}$

21. $f'(x) = -3x^2\sin(x^3 + 2) \cdot \cos(\cos(x^3 + 2))$

22. $f'(x) = -\sin(2x + b)$

23. $f'(x) = \frac{4}{\sin^2(2x)}$

24. $f'(x) = \frac{x\cdot\sin x}{\sqrt{1+x^2}} + \sqrt{1+x^2} \cdot \cos x$

25. $f'(x) = \frac{b\tan x}{2\sqrt{x}} + \frac{a+b\sqrt{x}}{\cos^2 x}$

26. $f'(x) = ab(1 + \tan^2(bx + c))$

27. $f'(x) = -\frac{1}{\sin^4 x}$

28. $f'(x) = \tan x(\tan^4 x - 1)(15\tan x - 8)$

29. $f'(x) = \tan^2 x$

30. $f'(x) = 2x(2x^2 - 3)\sin x + (x^4 - 3x^2 + 11)\cos x$

31. $f'(x) = \frac{n\cdot\tan^{n-1} x}{\cos^2 x}$

32. $f'(x) = \sin(2x - a)$

33. $f'(x) = \frac{1}{2\sqrt{x}\cos^2(\sqrt{x}-3)}$