Antiderivatives 2

Find the general antiderivative

1. $f'(x) = \sin 3x$
2. $f'(x) = \cos 4x$
3. $f'(x) = 6\sin 2x$
4. $f'(x) = 5\cos 5x$
5. $f'(x) = 2\sin x\cos x$
6. $f'(x) = 2\cos^2 x - 1$
7. $f'(x) = \cos^2 x\sin x$
8. $f'(x) = \sin^4 x\cos x$
9. $f'(x) = (\sin x)^{\frac{1}{2}}\cos x$
10. $f'(x) = (\cos x)^{\frac{3}{2}}\sin x$
11. $f'(x) = \sin(x+1)$
12. $f'(x) = \cos(2x-3)$

13. $f'(x) = \cos(\tfrac{1}{2}x+1)$
14. $f'(x) = \sin(\tfrac{2}{3}x+\tfrac{1}{3})$
15. $f'(x) = x\sin(x^2)$
16. $f'(x) = x\cos(x^2+2)$
17. $f'(x) = 2(x+1)\cos(x^2+2)$
18. $f'(x) = (2x+3)\sin(x^2+3x)$
19. $f'(x) = (2x-1)\sin(x^2-x+6)$
20. $f'(x) = x^2\cos(x^3+1)$
21. $f'(x) = \sin^2 x\cos x$
22. $f'(x) = \sin x(1-\sin^2 x)$

23. $f'(x) = \dfrac{\sin x}{\cos x}$
24. $f'(x) = \dfrac{\cos x}{\sin^2 x}$
25. $f'(x) = \sec^2 x$
26. $f'(x) = \sin^3 x$
27. $f'(x) = \dfrac{\sin x}{(1+\cos x)^2}$
28. $f'(x) = \dfrac{\cos x}{(1-\sin x)^2}$
29. $f'(x) = \sin^2 x\cos x + \cos^3 x$
30. $f'(x) = \sin x + \sin 2x$

Answers

1. $f(x) = -\tfrac{1}{3}\cos 3x + c$
2. $f(x) = \tfrac{1}{4}\sin 4x + c$
3. $f(x) = -3\cos 2x + c$
4. $f(x) = \sin 5x + c$
5. $f(x) = \sin^2 x + c$
6. $f(x) = \tfrac{1}{2}\sin 2x + c$
7. $f(x) = -\tfrac{1}{3}\cos^3 x + c$
8. $f(x) = \tfrac{1}{5}\sin^5 x + c$

9. $f(x) = \tfrac{2}{3}(\sin x)^{\frac{3}{2}} + c$
10. $f(x) = -\tfrac{2}{5}(\cos x)^{\frac{5}{2}} + c$
11. $f(x) = -\cos(x+1) + c$
12. $f(x) = \tfrac{1}{2}\sin(2x-3) + c$
13. $f(x) = 2\sin(\tfrac{1}{2}x+1) + c$
14. $f(x) = -\tfrac{3}{2}\cos(\tfrac{2}{3}x+\tfrac{1}{3}) + c$
15. $f(x) = -\tfrac{1}{2}\cos(x^2) + c$
16. $f(x) = \tfrac{1}{2}\sin(x^2+2) + c$
17. $f(x) = \sin(x^2+2) + c$

18. $f(x) = -\cos(x^2+3x) + c$
19. $f(x) = -\cos(x^2-x+6) + c$
20. $f(x) = \tfrac{1}{3}\sin(x^3+1) + c$
21. $f(x) = \tfrac{1}{3}\sin^3 x + c$
22. $f(x) = -\tfrac{1}{3}\cos^3 x + c$
23. $f(x) = (2\cos^2 x)^{-1} + c$ — $-\ln|\cos x|$ *(handwritten)*
24. $f(x) = -\csc x + c$
25. $f(x) = \tan x + c$
26. $f(x) = \tfrac{1}{3}\cos^3 x - \cos x + c$
27. $f(x) = (1+\cos x)^{-1} + c$
28. $f(x) = (1-\sin x)^{-1} + c$
29. $f(x) = \sin x + c$
30. $f(x) = -\cos x - \tfrac{1}{2}\cos 2x + c$