1-20: Integrate!.

1. $\displaystyle\int \frac{dx}{\sqrt{1-4x^2}}$
2. $\displaystyle\int \frac{dy}{y\sqrt{4y^2-1}}$
3. $\displaystyle\int \frac{dx}{\sqrt{9-x^2}}$
4. $\displaystyle\int \frac{12}{1+9x^2}\,dx$
5. $\displaystyle\int \frac{dx}{\sqrt{1-(x+1)^2}}$
6. $\displaystyle\int \frac{dx}{4+(x-3)^2}$
7. $\displaystyle\int \frac{t\,dt}{\sqrt{1-t^4}}$
8. $\displaystyle\int \frac{1}{x\sqrt{x^4-4}}\,dx$
9. $\displaystyle\int \frac{t}{t^4+25}\,dt$
10. $\displaystyle\int \frac{dx}{x\sqrt{1-(\ln x)^2}}$
11. $\displaystyle\int \frac{e^{2x}}{4+e^{4x}}\,dx$
12. $\displaystyle\int \frac{2}{x\sqrt{9x^2-25}}\,dx$
13. $\displaystyle\int \frac{\sec^2 x}{\sqrt{25-\tan^2 x}}\,dx$
14. $\displaystyle\int \frac{\sin x}{7+\cos^2 x}\,dx$
15. $\displaystyle\int \frac{dx}{\sqrt{x}\sqrt{1-x}}$
16. $\displaystyle\int \frac{3\,dy}{2\sqrt{y}(1+y)}$
17. $\displaystyle\int \frac{x-3}{x^2+1}\,dx$
18. $\displaystyle\int \frac{x^2+3}{x\sqrt{x^2-4}}\,dx$
19. $\displaystyle\int \frac{t+5}{\sqrt{9-(x-3)^2}}\,dt$
20. $\displaystyle\int \frac{x-2}{(x+1)^2+4}\,dx$

Answers:

1. $\frac{1}{2}\arcsin 2x + C$	2. $\operatorname{arcsec}\lvert 2y\rvert + C$	3. $\arcsin\frac{x}{3} + C$
4. $4\arctan 3x + C$	5. $\arcsin(x+1) + C$	6. $\frac{1}{2}\arctan\frac{x-3}{2} + C$
7. $\frac{1}{2}\arcsin t^2 + C$	8. $\frac{1}{2}\operatorname{arcsec}\frac{\lvert x\rvert}{2} + C$	9. $\frac{1}{10}\arctan\frac{t^2}{5} + C$
10. $\arcsin(\ln x) + C$	11. $\frac{1}{4}\arctan\frac{e^{2x}}{2} + C$	12. $\frac{2}{5}\operatorname{arcsec}\frac{\lvert 3x\rvert}{5} + C$
13. $\arcsin\frac{\tan x}{5} + C$	14. $\frac{-\sqrt{7}}{7}\arctan\frac{\cos x}{\sqrt{7}} + C$	15. $2\arcsin\sqrt{x} + C$
16. $3\arctan\sqrt{y} + C$	17. $\frac{1}{2}\ln(x^2+1) - 3\arctan x + C$	18. $\sqrt{x^2-4} + \frac{3}{2}\operatorname{arcsec}\frac{\lvert x\rvert}{2} + C$
19. $8\arcsin\frac{x-3}{3} - \sqrt{6x-x^2} + C$	20. $\frac{1}{2}\ln\lvert x^2+2x+5\rvert - \frac{3}{2}\arctan\frac{x+1}{2} + C$	