Section 7.1

More Examples

1. $\int \sin(3\theta)\cos^2(3\theta)d\theta$
2. $\int 4^{3t}dt$
3. $\int \sqrt{x}\left(1+\sqrt{x}\right)dx$
4. $\int \dfrac{x^4+x+1}{x^3}dx$
5. $\int \dfrac{1}{e^m}dm$
6. $\int \left(e^t+1\right)^2 dt$
7. $\int \dfrac{dx}{x^2+6x+9}$
8. $\int \dfrac{dt}{\cos^2 t}$
9. $\int w^2\cos(w^3)dw$
10. $\int \dfrac{\sec\alpha\tan\alpha}{3-\sec\alpha}d\alpha$
11. $\int \dfrac{x}{1+x}dx$
12. $\int \dfrac{1}{\sqrt{1-x^2}}dx$
13. $\int \sqrt[3]{Av+B}dv$
14. $\int \dfrac{3}{1+2t}dt$
15. $\int \dfrac{1}{y\left(\ln y\right)^3}dy$
16. $\int \dfrac{e^x}{1+e^{2x}}dx$
17. $\int \tan\left(\dfrac{\pi}{4}\right)dx$
18. $\int \left(\cos^2\alpha+\sin^2\alpha\right)d\alpha$

Solutions.

1. $\int \sin(3\theta)\cos^2(3\theta)d\theta = -\frac{1}{9}\cos^2(3\theta) + C$
2. $\int 4^{3t}dt = \frac{1}{3\ln 4}4^{3t} + C$
3. $\int \sqrt{x}\left(1+\sqrt{x}\right)dx = \frac{2}{3}x^{3/2} + \frac{1}{2}x^2 + C$
4. $\int \frac{x^4+x+1}{x^3}dx = \frac{1}{2}x^2 - \frac{1}{x} - \frac{1}{2x^2} + C$
5. $\int \frac{1}{e^m}dm = -\frac{1}{e^m} + C$
6. $\int \left(e^t+1\right)^2 dt = \frac{1}{2}e^{2t} + 2e^t + t + C$
7. $\int \frac{dx}{x^2+6x+9} = -\frac{1}{x+3} + C$
8. $\int \frac{dt}{\cos^2 t} = \tan t + C$
9. $\int w^2\cos(w^3)dw = \frac{1}{3}\sin(w^3) + C$
10. $\int \frac{\sec\alpha\tan\alpha}{3-\sec\alpha}d\alpha = -\ln|3-\sec\alpha| + C$
11. $\int \frac{x}{1+x}dx = x - \ln|1+x| + C$
12. $\int \frac{1}{\sqrt{1-x^2}}dx = \arcsin x + C$
13. $\int \sqrt[3]{Av+B}dv = \frac{3}{4A}(4A+B)^{4/3} + C$
14. $\int \frac{3}{1+2t}dt = \frac{3}{2}\ln|1+2t| + C$
15. $\int \frac{1}{y\left(\ln y\right)^3}dy = -\frac{1}{2(\ln y)^2} + C$
16. $\int \frac{e^x}{1+e^{2x}}dx = \arctan(e^x) + C$
17. $\int \tan\left(\frac{\pi}{4}\right)dx = x + c$
18. $\int \left(\cos^2\alpha + \sin^2\alpha\right)d\alpha = \alpha + C$