

Integrals

By inspection or substitution or partial fractions or by parts?

If substitution, give a suitable substitution.

$$1 \int \frac{3}{2x+1} dx$$

$$2 \int x\sqrt{x+2} dx$$

$$3 \int \frac{4}{(2x+1)^2} dx$$

$$4 \int \frac{e^x}{e^x + 1} dx$$

$$5 \int \frac{x}{(x+1)^2} dx$$

$$6 \int \frac{\cos x}{\sin^2 x} dx$$

$$7 \int_0^{\sqrt{3}} \frac{1}{(4-x^2)^{\frac{3}{2}}} dx \quad (\text{Jan 2015})$$

$$8 \int_1^3 \frac{4}{t^2(t+2)} dt \quad (\text{Jan 2015})$$

$$9 \int \frac{x^2}{3} \ln x dx \quad (\text{Jan 2015})$$

$$10 \int \frac{1}{x(2\sqrt{x}-1)} dx \quad (\text{June 2013 C4})$$

$$11 \int \frac{4e^{-x}}{3\sqrt{1+3e^{-x}}} dx \quad (\text{Jan 2014 C4})$$

$$12 \int \frac{dx}{4-\sqrt{x}} \quad (\text{June 2016})$$