INTEGRALS 2

Evaluate the following integrals.

(1) $\displaystyle\int \frac{1}{(x^2 + 4x + 5)^2}\,\mathrm{d}x.$

(2) $\displaystyle\int \frac{x^2 + 1}{x^3 + 8}\,\mathrm{d}x.$

(3) $\displaystyle\int \frac{1}{e^{2x} - 2e^x + 1}\,\mathrm{d}x.$

(4) $\displaystyle\int \frac{1}{\cos\theta(1 + \sin\theta)}\,\mathrm{d}\theta.$

(5) $\displaystyle\int \frac{1}{x^{\frac{1}{3}} - 1}\,\mathrm{d}x.$

(6) $\displaystyle\int \sqrt{1 + e^x}\,\mathrm{d}x.$

Note that $1 + e^x$ is always positive.

(7) $\displaystyle\int_0^{4\pi} \frac{1}{3 + \sin\theta}\,\mathrm{d}\theta.$

The integrand is a positive continuous function.