

! For an efficient use of these tables, first read [HowTo.pdf](#).

T3.42B. Integrands involving product of exponentials and trigonometric functions of linear and quadratic arguments on the interval $(-\infty, \infty)$.

$$\begin{aligned}
 1. \int_{-\infty}^{\infty} \exp [-(ax^2 + 2bx + c)] \sin(px^2 + 2qx + r) dx \\
 = \frac{\sqrt{\pi}}{(a^2 + p^2)^{1/4}} \exp \frac{a(b^2 - ac) - (aq^2 - 2bpq + cp^2)}{a^2 + p^2} \\
 \times \sin \left\{ \frac{1}{2} \arctan \frac{p}{a} - \frac{p(q^2 - pr) - (b^2p - 2abq + a^2r)}{a^2 + p^2} \right\}, \quad a > 0.
 \end{aligned}$$

$$\begin{aligned}
 2. \int_{-\infty}^{\infty} \exp [-(ax^2 + 2bx + c)] \cos(px^2 + 2qx + r) dx \\
 = \frac{\sqrt{\pi}}{(a^2 + p^2)^{1/4}} \exp \frac{a(b^2 - ac) - (aq^2 - 2bpq + cp^2)}{a^2 + p^2} \\
 \times \cos \left\{ \frac{1}{2} \arctan \frac{p}{a} - \frac{p(q^2 - pr) - (b^2p - 2abq + a^2r)}{a^2 + p^2} \right\}, \quad a > 0.
 \end{aligned}$$
