**!** For an efficient use of these tables, first read `HowTo.pdf`.

**T2.14C.** Integrands of the form $\sqrt{(a^2 \pm x^2)\,(x^2 \pm b^2)}$ and $\sqrt{(a^2 \pm x^2)\,(x^2 \pm b^2)}$ on the interval $(0, y)$.

Notation used: $\alpha = \arctan \dfrac{y}{b}$, $\gamma = \arcsin \dfrac{y}{b}\sqrt{\dfrac{a^2+b^2}{a^2+y^2}}$, $\eta = \arcsin \dfrac{y}{b}$,

$$q = \frac{\sqrt{a^2-b^2}}{a}, \quad r = \frac{b}{\sqrt{a^2+b^2}}, \quad t = \frac{b}{a}.$$

1. $$\int_0^y \sqrt{(x^2+a^2)(x^2+b^2)}\,dx = \frac{a}{3}\{2b^2F(\alpha,\,q) - (a^2+b^2)E(\alpha,\,q)\} + \frac{y}{3}(y^2+a^2+2b^2)\sqrt{\frac{a^2+y^2}{b^2+y^2}}, \quad a > b,\ y > 0.$$

2. $$\int_0^y \sqrt{(a^2+x^2)(b^2-x^2)}\,dx = \frac{1}{3}\sqrt{a^2+b^2}\{a^2F(\gamma,\,r) - (a^2-b^2)E(\gamma,\,r)\} + \frac{y}{3}(y^2+2a^2-b^2)\sqrt{\frac{b^2-y^2}{a^2+y^2}}, \quad a \ge y > 0.$$

3. $$\int_0^y \sqrt{(a^2-x^2)(b^2-x^2)}\,dx = \frac{a}{3}\{(a^2+b^2)E(\eta,\,t) - (a^2-b^2)F(\eta,\,t)\} + \frac{y}{3}\sqrt{(a^2-y^2)(b^2-y^2)}, \quad a > b \ge y > 0.$$