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

**T2.18B.** Integrands of the form $\dfrac{1}{x^4\sqrt{(a^2 \pm x^2)\,(b^2 \pm x^2)}}$ on the intervals $(y, b)$ and $(b, y)$.

Notation used: $\delta = \arccos\dfrac{y}{b}$, $\varepsilon = \arccos\dfrac{b}{y}$,

$$\zeta = \arcsin\frac{a}{b}\sqrt{\frac{b^2-y^2}{a^2-y^2}}, \quad \kappa = \arcsin\frac{a}{y}\sqrt{\frac{y^2-b^2}{a^2-b^2}},$$

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

1. $$\int_y^b \frac{dx}{x^4\sqrt{(x^2+a^2)(b^2-x^2)}} = \frac{1}{3a^4b^4\sqrt{a^2+b^2}}\{a^2(2a^2-b^2)F(\delta,\,r) - 2(a^4-b^4)E(\delta,\,r)\}$$
$$+\frac{a^2b^2+2y^2(a^2-b^2)}{3a^4b^4y^3}\sqrt{(b^2-y^2)(a^2+y^2)}, \quad b > y > 0.$$

2. $$\int_b^y \frac{dx}{x^4\sqrt{(x^2+a^2)(x^2-b^2)}} = \frac{2b^2-a^2}{3a^4b^2\sqrt{a^2+b^2}}F(\varepsilon,\,s) + \frac{2}{3}\frac{(a^2-b^2)\sqrt{a^2+b^2}}{a^4b^4}E(\varepsilon,\,s)$$
$$+\frac{1}{3a^2b^2y^3}\sqrt{(y^2+a^2)(y^2-b^2)}, \quad y > b > 0.$$

3. $$\int_y^b \frac{dx}{x^4\sqrt{(a^2-x^2)(b^2-x^2)}} = \frac{1}{3a^3b^4}\left\{(2a^2+b^2)F(\zeta,\,t) - 2(a^2+b^2)E(\zeta,\,t)\right.$$
$$\left.+\frac{[(2a^2+b^2)y^2+a^2b^2]a}{y^3}\sqrt{\frac{b^2-y^2}{a^2-y^2}}\right\}, \quad a > b > y > 0.$$

4. $$\int_b^y \frac{dx}{x^4\sqrt{(a^2-x^2)(x^2-b^2)}} = \frac{1}{3a^3b^4}\{2(a^2+b^2)E(\kappa,\, q) - b^2F(\kappa,\, q)\} + \frac{1}{3a^2b^2y^3}\sqrt{(a^2-y^2)(y^2-b^2)}, \quad a \geq y > b > 0.$$