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

T2.15B. Integrands of the form $\dfrac{1}{x^2\sqrt{(a^2 \pm x^2)\,(b^2 \pm x^2)}}$ on the intervals (y, b) and (b, y).

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

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

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

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

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

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

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