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

T2.16B. Integrands of the form $\dfrac{1}{(\pm p \mp x^2)^2 \sqrt{(a^2 \pm x^2)(b^2 \pm x^2)}}$ on the intervals (y, b) and (b, y).

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

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

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

1. $$\int_y^b \frac{dx}{(p-x^2)\sqrt{(a^2+x^2)(b^2-x^2)}} = \frac{1}{(p-b^2)\sqrt{a^2+b^2}}\Pi\left(\delta,\, \frac{b^2}{b^2-p},\, r\right), \quad b > y \geq 0,\ p \neq b^2.$$

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

3. $$\int_y^b \frac{dx}{(p-x^2)\sqrt{(a^2-x^2)(b^2-x^2)}} = \frac{1}{a(p-a^2)(p-b^2)} \times \left\{(b^2-a^2)\Pi\left(\zeta,\, \frac{b^2(p-a^2)}{a^2(p-b^2)},\, t\right) + \left(p-b^2\right)F\left(\zeta,\, t\right)\right\}, \quad a > b > y \geq 0,\ p \neq b^2.$$

4. $$\int_b^y \frac{dx}{(p-x^2)\sqrt{(a^2-x^2)(x^2-b^2)}} = \frac{1}{ap(p-b^2)} \times \left\{b^2\Pi\left(\kappa,\, \frac{p(a^2-b^2)}{a^2(p-b^2)},\, q\right) + \left(p-b^2\right)F\left(\kappa,\, q\right)\right\}, \quad a \geq y > b > 0,\ p \neq b^2.$$
