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

T2.16C. 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 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. $$\int_0^y \frac{dx}{(p-x^2)\sqrt{(x^2+a^2)(x^2+b^2)}} = \frac{1}{a(p+b^2)}\left\{\frac{b^2}{p}\Pi\left(\alpha,\, \frac{p+b^2}{p},\, q\right) + F(\alpha,\, q)\right\}, \quad p \neq 0.$$

2. $$\int_0^y \frac{dx}{(p-x^2)\sqrt{(a^2+x^2)(b^2-x^2)}} = \frac{1}{p(p+a^2)\sqrt{a^2+b^2}} \times \left\{a^2\Pi\left(\gamma,\, \frac{b^2(p+a^2)}{p(a^2+b^2)},\, r\right) + pF(\gamma,\, r)\right\}, \quad b \geq y > 0,\ p \neq 0.$$

3. $$\int_0^y \frac{dx}{(p-x^2)\sqrt{(a^2-x^2)(b^2-x^2)}} = \frac{1}{ap}\Pi\left(\eta,\, \frac{b^2}{p},\, t\right), \quad a > b \geq y > 0;\ p \neq b.$$