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

T3.15A. Integrands of the form $\dfrac{1}{\sqrt{\left(a^2 \pm x^2\right)^3 \left(b^2 \pm x^2\right)^3}}$ on the interval (y, ∞).

Notation used: $\quad \beta = \arctan \dfrac{a}{y}, \quad \xi = \arcsin \sqrt{\dfrac{a^2+b^2}{a^2+y^2}}, \quad \nu = \arcsin \dfrac{a}{y},$

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

1. $$\int_y^\infty \frac{dx}{\sqrt{(x^2+a^2)^3(x^2+b^2)^3}} = \frac{1}{ab^2(a^2-b^2)^2}\left\{(a^2+b^2)E(\beta,\, q) - 2b^2 F(\beta,\, q)\right\} - \frac{y}{b^2(a^2-b^2)\sqrt{(a^2+y^2)(b^2+y^2)}}, \quad a > b,\, y \geq 0.$$

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

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