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

T2.10C. Integrands of the form $\sqrt{\pm\dfrac{(a-x)(b-x)}{(c-x)}}$, $\sqrt{\pm\dfrac{(b-x)(c-x)}{(a-x)}}$ and $\sqrt{\pm\dfrac{(a-x)(c-x)}{(b-x)}}$ on the intervals (y,c) and (c,y).

Notation used: $\beta = \arcsin\sqrt{\dfrac{c-y}{b-y}}$, $\gamma = \arcsin\sqrt{\dfrac{y-c}{b-c}}$, $p = \sqrt{\dfrac{a-b}{a-c}}$, $q = \sqrt{\dfrac{b-c}{a-c}}$.

1. $$\int_y^c \sqrt{\frac{(b-x)(c-x)}{a-x}}\,dx = \frac{2}{3}\sqrt{a-c}\,[(2a-b-c)E(\beta,\,p)-(b-c)F(\beta,\,p)] + \frac{2}{3}(2b-2a+c-y)\sqrt{\frac{(a-y)(c-y)}{b-y}}, \quad a>b>c>y.$$

2. $$\int_c^y \sqrt{\frac{(x-c)(b-x)}{a-x}}\,dx = \frac{2}{3}\sqrt{a-c}\,[(2a-b-c)E(\gamma,\,q)-2(a-b)F(\gamma,\,q)] - \frac{2}{3}\sqrt{(a-y)(b-y)(y-c)}, \quad a>b\ge y>c.$$

3. $$\int_y^c \sqrt{\frac{(a-x)(c-x)}{b-x}}\,dx = \frac{2}{3}\sqrt{a-c}\,[(2b-a-c)E(\beta,\,p)-(b-c)F(\beta,\,p)] + \frac{2}{3}(a+c-b-y)\sqrt{\frac{(a-y)(c-y)}{b-y}}, \quad a>b>c>y.$$

4. $$\int_c^y \sqrt{\frac{(a-x)(x-c)}{b-x}}\,dx = \frac{2}{3}\sqrt{a-c}\,[(2b-a-c)E(\gamma,\,q)+(a-b)F(\gamma,\,q)] - \frac{2}{3}\sqrt{(a-y)(b-y)(y-c)}, \quad a>b\ge y>c.$$

5. $$\int_y^c \sqrt{\frac{(a-x)(b-x)}{c-x}}\,dx = \frac{2}{3}\sqrt{a-c}\,[2(b-c)F(\beta,\,p) + (2c-a-b)E(\beta,\,p)]$$
$$+\frac{2}{3}(a+2b-2c-y)\sqrt{\frac{(a-y)(c-y)}{b-y}}, \quad a > b > c > y.$$

6. $$\int_c^y \sqrt{\frac{(a-x)(b-x)}{x-c}}\,dx = \frac{2}{3}\sqrt{a-c}\,[(a+b-2c)E(\gamma,\,q) - (a-b)F(\gamma,\,q)]$$
$$+\frac{2}{3}\sqrt{(a-y)(b-y)(y-c)}, \quad a > b \geq y > c.$$