515. $$\int \arcsin\frac{x}{a}\,dx = x\arcsin\frac{x}{a} + \sqrt{a^2 - x^2}.$$

516. $$\int \left(\arcsin\frac{x}{a}\right)^2 dx = x\left(\arcsin\frac{x}{a}\right)^2 - 2x + 2\sqrt{a^2 - x^2}\arcsin\frac{x}{a}.$$

517.1. $$\int x\arcsin\frac{x}{a}\,dx = \left(\frac{x^2}{2} - \frac{a^2}{4}\right)\arcsin\frac{x}{a} + \frac{x}{4}\sqrt{a^2 - x^2}.$$

517.2. $$\int x^2\arcsin\frac{x}{a}\,dx = \frac{x^3}{3}\arcsin\frac{x}{a} + \frac{1}{9}(x^2 + 2a^2)\sqrt{a^2 - x^2}.$$

517.3. $$\int x^3\arcsin\frac{x}{a}\,dx = \left(\frac{x^4}{4} - \frac{3a^4}{32}\right)\arcsin\frac{x}{a} + \frac{1}{32}(2x^3 + 3xa^2)\sqrt{a^2 - x^2}.$$

517.4. $$\int x^4\arcsin\frac{x}{a}\,dx = \frac{x^5}{5}\arcsin\frac{x}{a} + \frac{1}{75}(3x^4 + 4x^2a^2 + 8a^4)\sqrt{a^2 - x^2}.$$

517.5. $$\int x^5\arcsin\frac{x}{a}\,dx = \left(\frac{x^6}{6} - \frac{5a^6}{96}\right)\arcsin\frac{x}{a} + \frac{1}{288}(8x^5 + 10x^3a^2 + 15xa^4)\sqrt{a^2 - x^2}.$$

517.6. $$\int x^6\arcsin\frac{x}{a}\,dx = \frac{x^7}{7}\arcsin\frac{x}{a} + \frac{1}{245}(5x^6 + 6x^4a^2 + 8x^2a^4 + 16a^6)\sqrt{a^2 - x^2}.$$

517.9. $$\int x^n\arcsin\frac{x}{a}\,dx = \frac{x^{n+1}}{n+1}\arcsin\frac{x}{a} - \frac{1}{n+1}\int \frac{x^{n+1}\,dx}{\sqrt{a^2 - x^2}} \quad [n \neq -1].$$

[См. **321 — 327.**]

518.1. $$\int \frac{1}{x}\arcsin\frac{x}{a}\,dx = \frac{x}{a} + \frac{1}{2\cdot3\cdot3}\frac{x^3}{a^3} + \frac{1\cdot3}{2\cdot4\cdot5\cdot5}\frac{x^5}{a^5} + \frac{1\cdot3\cdot5}{2\cdot4\cdot6\cdot7\cdot7}\frac{x^7}{a^7} + \ldots \quad [x^2 < a^2].$$

518.2. $$\int \frac{1}{x^2}\arcsin\frac{x}{a}\,dx = -\frac{1}{x}\arcsin\frac{x}{a} - \frac{1}{a}\ln\left|\frac{a+\sqrt{a^2-x^2}}{x}\right|.$$

518.3. $$\int \frac{1}{x^3}\arcsin\frac{x}{a}\,dx = -\frac{1}{2x^2}\arcsin\frac{x}{a} - \frac{\sqrt{a^2-x^2}}{2a^2x}.$$

518.4. $$\int \frac{1}{x^4}\arcsin\frac{x}{a}\,dx = -\frac{1}{3x^3}\arcsin\frac{x}{a} - \frac{\sqrt{a^2-x^2}}{6a^2x^2} - \frac{1}{6a^3}\ln\left|\frac{a+\sqrt{a^2-x^2}}{x}\right|.$$

518.9. $$\int \frac{1}{x^n}\arcsin\frac{x}{a}\,dx = -\frac{1}{(n-1)\,x^{n-1}}\arcsin\frac{x}{a} + \frac{1}{n-1}\int \frac{dx}{x^{n-1}\sqrt{a^2-x^2}} \quad [n \neq 1]$$ [См. 341—346.]

520. $$\int \arccos\frac{x}{a}\,dx = x\arccos\frac{x}{a} - \sqrt{a^2-x^2}.$$

521. $$\int \left(\arccos\frac{x}{a}\right)^2 dx = x\left(\arccos\frac{x}{a}\right)^2 - 2x - 2\sqrt{a^2-x^2}\arccos\frac{x}{a}.$$

522.1. $$\int x\arccos\frac{x}{a}\,dx = \left(\frac{x^2}{2} - \frac{a^2}{4}\right)\arccos\frac{x}{a} - \frac{x}{4}\sqrt{a^2-x^2}.$$

522.2. $$\int x^2\arccos\frac{x}{a}\,dx = \frac{x^3}{3}\arccos\frac{x}{a} - \frac{1}{9}(x^2+2a^2)\sqrt{a^2-x^2}.$$

522.3. $$\int x^3\arccos\frac{x}{a}\,dx = \left(\frac{x^4}{4} - \frac{3a^4}{32}\right)\arccos\frac{x}{a} - \frac{1}{32}(2x^3+3xa^2)\sqrt{a^2-x^2}.$$

522.4. $$\int x^4\arccos\frac{x}{a}\,dx = \frac{x^5}{5}\arccos\frac{x}{a} - \frac{1}{75}(3x^4+4x^2a^2+8a^4)\sqrt{a^2-x^2}.$$

522.5. $$\int x^5\arccos\frac{x}{a}\,dx = \left(\frac{x^6}{6} - \frac{5a^6}{96}\right)\arccos\frac{x}{a} - \frac{1}{288}(8x^5+10x^3a^2+15xa^4)\sqrt{a^2-x^2}.$$

522.6. $$\int x^6\arccos\frac{x}{a}\,dx = \frac{x^7}{7}\arccos\frac{x}{a} - \frac{1}{245}(5x^6+6x^4a^2+8x^2a^4+16a^6)\sqrt{a^2-x^2}.$$

522.9. $$\int x^n\arccos\frac{x}{a}\,dx = \frac{x^{n+1}}{n+1}\arccos\frac{x}{a} + \frac{1}{n+1}\int \frac{x^{n+1}\,dx}{\sqrt{a^2-x^2}} \quad [n \neq -1].$$ [См. 321—327.]

523.1. $$\int \frac{1}{x} \arccos\frac{x}{a}\,dx = \frac{\pi}{2}\ln|x| - \frac{x}{a} - \frac{1}{2\cdot 3\cdot 3}\frac{x^3}{a^3} - \frac{1\cdot 3}{2\cdot 4\cdot 5\cdot 5}\frac{x^5}{a^5} - \frac{1\cdot 3\cdot 5}{2\cdot 4\cdot 6\cdot 7\cdot 7}\frac{x^7}{a^7} - \ldots \quad [x^2 < a^2].$$

523.2. $$\int \frac{1}{x^2} \arccos\frac{x}{a}\,dx = -\frac{1}{x}\arccos\frac{x}{a} + \frac{1}{a}\ln\left|\frac{a+\sqrt{a^2-x^2}}{x}\right|.$$

523.3. $$\int \frac{1}{x^3} \arccos\frac{x}{a}\,dx = -\frac{1}{2x^2}\arccos\frac{x}{a} + \frac{\sqrt{a^2-x^2}}{2a^2x}.$$

523.4. $$\int \frac{1}{x^4} \arccos\frac{x}{a}\,dx = -\frac{1}{3x^3}\arccos\frac{x}{a} + \frac{\sqrt{a^2-x^2}}{6a^2x^2} + \frac{1}{6a^3}\ln\left|\frac{a+\sqrt{a^2-x^2}}{x}\right|.$$

523.9. $$\int \frac{1}{x^n} \arccos\frac{x}{a}\,dx = \frac{1}{(n-1)\,x^{n-1}}\arccos\frac{x}{a} - \frac{1}{n-1}\int \frac{dx}{x^{n-1}\sqrt{a^2-x^2}} \quad [n \neq 1].$$ [См. **341—346.**]

525. $$\int \operatorname{arctg}\frac{x}{a}\,dx = x\operatorname{arctg}\frac{x}{a} - \frac{a}{2}\ln(a^2+x^2).$$

525.1. $$\int x \operatorname{arctg}\frac{x}{a}\,dx = \frac{1}{2}(x^2+a^2)\operatorname{arctg}\frac{x}{a} - \frac{ax}{2}.$$

525.2. $$\int x^2 \operatorname{arctg}\frac{x}{a}\,dx = \frac{x^3}{3}\operatorname{arctg}\frac{x}{a} - \frac{ax^2}{6} + \frac{a^3}{6}\ln(a^2+x^2).$$

525.3. $$\int x^3 \operatorname{arctg}\frac{x}{a}\,dx = \frac{1}{4}(x^4-a^4)\operatorname{arctg}\frac{x}{a} - \frac{ax^3}{12} + \frac{a^3x}{4}.$$

525.4. $$\int x^4 \operatorname{arctg}\frac{x}{a}\,dx = \frac{x^5}{5}\operatorname{arctg}\frac{x}{a} - \frac{ax^4}{20} + \frac{a^3x^2}{10} - \frac{a^5}{10}\ln(a^2+x^2).$$

525.5. $$\int x^5 \operatorname{arctg}\frac{x}{a}\,dx = \frac{1}{6}(x^6+a^6)\operatorname{arctg}\frac{x}{a} - \frac{ax^5}{30} + \frac{a^3x^3}{18} - \frac{a^5x}{6}.$$

525.6. $$\int x^6 \operatorname{arctg}\frac{x}{a}\,dx = \frac{x^7}{7}\operatorname{arctg}\frac{x}{a} - \frac{ax^6}{42} + \frac{a^3x^4}{28} - \frac{a^5x^2}{14} + \frac{a^7}{14}\ln(a^2+x^2).$$

525.9. $$\int x^n \operatorname{arctg}\frac{x}{a}\,dx = \frac{x^{n+1}}{n+1}\operatorname{arctg}\frac{x}{a} - \frac{a}{n+1}\int \frac{x^{n+1}\,dx}{a^2+x^2} \quad [n \neq -1].$$

[См. **121—128.**]

526.1. $$\int \frac{1}{x}\operatorname{arctg}\frac{x}{a}\,dx = \frac{x}{a} - \frac{x^3}{3^2a^3} + \frac{x^5}{5^2a^5} - \frac{x^7}{7^2a^7} + \ldots \quad [x^2 < a^2],$$
$$= \frac{\pi}{2}\ln|x| + \frac{a}{x} - \frac{a^3}{3^2x^3} + \frac{a^5}{5^2x^5} - \frac{a^7}{7^2x^7} + \ldots \left[\frac{x}{a} > 1\right],$$
$$= -\frac{\pi}{2}\ln|x| + \frac{a}{x} - \frac{a^3}{3^2x^3} + \frac{a^5}{5^2x^5} - \frac{a^7}{7^2x^7} + \ldots \left[\frac{x}{a} < -1\right].$$

526.2. $$\int \frac{1}{x^2}\operatorname{arctg}\frac{x}{a}\,dx = -\frac{1}{x}\operatorname{arctg}\frac{x}{a} - \frac{1}{2a}\ln\frac{a^2+x^2}{x^2}.$$

526.3. $$\int \frac{1}{x^3}\operatorname{arctg}\frac{x}{a}\,dx = -\frac{1}{2}\left(\frac{1}{x^2} + \frac{1}{a^2}\right)\operatorname{arctg}\frac{x}{a} - \frac{1}{2ax}.$$

526.4. $$\int \frac{1}{x^4}\operatorname{arctg}\frac{x}{a}\,dx = -\frac{1}{3x^3}\operatorname{arctg}\frac{x}{a} - \frac{1}{6ax^2} + \frac{1}{6a^3}\ln\frac{a^2+x^2}{x^2}.$$

526.5. $$\int \frac{1}{x^5}\operatorname{arctg}\frac{x}{a}\,dx = \frac{1}{4}\left(\frac{1}{a^4} - \frac{1}{x^4}\right)\operatorname{arctg}\frac{x}{a} - \frac{1}{12ax^3} + \frac{1}{4a^3x}.$$

526.9. $$\int \frac{1}{x^n}\operatorname{arctg}\frac{x}{a}\,dx = -\frac{1}{(n-1)\,x^{n-1}}\operatorname{arctg}\frac{x}{a} + \frac{a}{n-1}\int \frac{dx}{x^{n-1}(a^2+x^2)}$$
$[n \neq 1]$. [См. 131—135.]

528. $$\int \operatorname{arcctg}\frac{x}{a}\,dx = x\operatorname{arcctg}\frac{x}{a} + \frac{a}{2}\ln(a^2+x^2).$$

528.1. $$\int x\operatorname{arcctg}\frac{x}{a}\,dx = \frac{1}{2}(x^2+a^2)\operatorname{arcctg}\frac{x}{a} + \frac{ax}{2}.$$

528.2. $$\int x^2\operatorname{arcctg}\frac{x}{a}\,dx = \frac{x^3}{3}\operatorname{arcctg}\frac{x}{a} + \frac{ax^2}{6} - \frac{a^3}{6}\ln(a^2+x^2).$$

528.3. $$\int x^3\operatorname{arcctg}\frac{x}{a}\,dx = \frac{1}{4}(x^4-a^4)\operatorname{arcctg}\frac{x}{a} + \frac{ax^3}{12} - \frac{a^3x}{4}.$$

528.4. $$\int x^4\operatorname{arcctg}\frac{x}{a}\,dx = \frac{x^5}{5}\operatorname{arcctg}\frac{x}{a} + \frac{ax^4}{20} - \frac{a^3x^2}{10} + \frac{a^5}{10}\ln(a^2+x^2).$$

528.5. $$\int x^5\operatorname{arcctg}\frac{x}{a}\,dx = \frac{1}{6}(x^6+a^6)\operatorname{arcctg}\frac{x}{a} + \frac{ax^5}{30} - \frac{a^3x^3}{18} + \frac{a^5x}{6}.$$

528.6. $$\int x^6\operatorname{arcctg}\frac{x}{a}\,dx = \frac{x^7}{7}\operatorname{arcctg}\frac{x}{a} + \frac{ax^6}{42} - \frac{a^3x^4}{28} + \frac{a^5x^2}{14} - \frac{a^7}{14}\ln(a^2+x^2).$$

528.9. $$\int x^n\operatorname{arcctg}\frac{x}{a}\,dx = \frac{x^{n+1}}{n+1}\operatorname{arcctg}\frac{x}{a} + \frac{a}{n+1}\int \frac{x^{n+1}\,dx}{a^2+x^2} \quad [n \neq -1].$$
[См. 121—128.]

529.1. $$\int \frac{1}{x}\operatorname{arcctg}\frac{x}{a}\,dx=\frac{\pi}{2}\ln|x|-\frac{x}{a}+\frac{x^3}{3^2a^3}-\frac{x^5}{5^2a^5}+\frac{x^7}{7^2a^7}-\ldots$$
$$\left[x^2<a^2\right],$$
$$=-\frac{a}{x}+\frac{a^3}{3^2x^3}-\frac{a^5}{5^2x^5}+\frac{a^7}{7^2x^7}-\ldots\quad\left[\frac{x}{a}>1\right],$$
$$=\pi\ln|x|-\frac{a}{x}+\frac{a^3}{3^2x^3}-\frac{a^5}{5^2x^5}+\frac{a^7}{7^2x^7}-\ldots$$
$$\left[\frac{x}{a}<-1\right].$$

529.2. $$\int \frac{1}{x^2}\operatorname{arcctg}\frac{x}{a}\,dx=-\frac{1}{x}\operatorname{arcctg}\frac{x}{a}+\frac{1}{2a}\ln\frac{a^2+x^2}{x^2}.$$

529.3. $$\int \frac{1}{x^3}\operatorname{arcctg}\frac{x}{a}\,dx=-\frac{1}{2x^2}\operatorname{arcctg}\frac{x}{a}+\frac{1}{2ax}+\frac{1}{2a^2}\operatorname{arctg}\frac{x}{a}.$$

529.4. $$\int \frac{1}{x^4}\operatorname{arcctg}\frac{x}{a}\,dx=-\frac{1}{3x^3}\operatorname{arcctg}\frac{x}{a}+\frac{1}{6ax^2}-\frac{1}{6a^3}\ln\frac{a^2+x^2}{x^2}.$$

529.5. $$\int \frac{1}{x^5}\operatorname{arcctg}\frac{x}{a}\,dx=-\frac{1}{4x^4}\operatorname{arcctg}\frac{x}{a}+\frac{1}{12ax^3}-$$
$$-\frac{1}{4a^2x}-\frac{1}{4a^3}\operatorname{arctg}\frac{x}{a}.$$

529.9. $$\int \frac{1}{x^n}\operatorname{arcctg}\frac{x}{a}\,dx=-\frac{1}{(n-1)\,x^{n-1}}\operatorname{arcctg}\frac{x}{a}-$$
$$-\frac{a}{n-1}\int\frac{dx}{x^{n-1}(a^2+x^2)}\quad[n\neq 1].$$ [См. **131—135.**]

531. $$\int \operatorname{arcsec}\frac{x}{a}\,dx=x\operatorname{arcsec}\frac{x}{a}-a\ln\left|x+\sqrt{x^2-a^2}\right|$$
$$\left[0<\operatorname{arcsec}\frac{x}{a}<\frac{\pi}{2}\right],$$
$$=x\operatorname{arcsec}\frac{x}{a}+a\ln\left|x+\sqrt{x^2-a^2}\right|$$
$$\left[\frac{\pi}{2}<\operatorname{arcsec}\frac{x}{a}<\pi\right].$$

531.1. $$\int x\operatorname{arcsec}\frac{x}{a}\,dx=\frac{x^2}{2}\operatorname{arcsec}\frac{x}{a}-\frac{a}{2}\sqrt{x^2-a^2}$$
$$\left[0<\operatorname{arcsec}\frac{x}{a}<\frac{\pi}{2}\right],$$
$$=\frac{x^2}{2}\operatorname{arcsec}\frac{x}{a}+\frac{a}{2}\sqrt{x^2-a^2}$$
$$\left[\frac{\pi}{2}<\operatorname{arcsec}\frac{x}{a}<\pi\right].$$

531.2. $$\int x^2 \operatorname{arcsec}\frac{x}{a}\,dx = \frac{x^3}{3}\operatorname{arcsec}\frac{x}{a} - \frac{ax}{6}\sqrt{x^2-a^2} - \frac{a^3}{6}\ln\left|x+\sqrt{x^2-a^2}\right|$$
$$\left[0 < \operatorname{arcsec}\frac{x}{a} < \frac{\pi}{2}\right],$$
$$= \frac{x^3}{3}\operatorname{arcsec}\frac{x}{a} + \frac{ax}{6}\sqrt{x^2-a^2} + \frac{a^3}{6}\ln\left|x+\sqrt{x^2-a^2}\right|$$
$$\left[\frac{\pi}{2} < \operatorname{arcsec}\frac{x}{a} < \pi\right].$$

531.9. $$\int x^n \operatorname{arcsec}\frac{x}{a}\,dx = \frac{x^{n+1}}{n+1}\operatorname{arcsec}\frac{x}{a} - \frac{a}{n+1}\int \frac{x^n dx}{\sqrt{x^2-a^2}}$$
$$\left[0 < \operatorname{arcsec}\frac{x}{a} < \frac{\pi}{2}\right],\ [n \neq -1],$$
$$= \frac{x^{n+1}}{n+1}\operatorname{arcsec}\frac{x}{a} + \frac{a}{n+1}\int \frac{x^n dx}{\sqrt{x^2-a^2}} \quad \left[\frac{\pi}{2} < \operatorname{arcsec}\frac{x}{a} < \pi\right],$$
$$[n \neq -1]$$

532.1. $$\int \frac{1}{x}\operatorname{arcsec}\frac{x}{a}\,dx = \frac{\pi}{2}\ln|x| + \frac{a}{x} + \frac{a^3}{2\cdot 3\cdot 3x^3} + \frac{1\cdot 3a^5}{2\cdot 4\cdot 5\cdot 5x^5} +$$
$$+ \frac{1\cdot 3\cdot 5a^7}{2\cdot 4\cdot 6\cdot 7\cdot 7x^7} + \ldots \quad \left[0 < \operatorname{arcsec}\frac{x}{a} < \frac{\pi}{2}\right].$$

532.2. $$\int \frac{1}{x^2}\operatorname{arcsec}\frac{x}{a}\,dx = -\frac{1}{x}\operatorname{arcsec}\frac{x}{a} + \frac{\sqrt{x^2-a^2}}{ax}$$
$$\left[0 < \operatorname{arcsec}\frac{x}{a} < \frac{\pi}{2}\right],$$
$$= -\frac{1}{x}\operatorname{arcsec}\frac{x}{a} - \frac{\sqrt{x^2-a^2}}{ax}$$
$$\left[\frac{\pi}{2} < \operatorname{arcsec}\frac{x}{a} < \pi\right].$$

532.3. $$\int \frac{1}{x^3}\operatorname{arcsec}\frac{x}{a}\,dx =$$
$$= -\frac{1}{2x^2}\operatorname{arcsec}\frac{x}{a} + \frac{\sqrt{x^2-a^2}}{4ax^2} + \frac{1}{4a^2}\arccos\left|\frac{a}{x}\right|$$
$$\left[0 < \operatorname{arcsec}\frac{x}{a} < \frac{\pi}{2}\right],$$
$$= -\frac{1}{2x^2}\operatorname{arcsec}\frac{x}{a} - \frac{\sqrt{x^2-a^2}}{4ax^2} - \frac{1}{4a^2}\arccos\left|\frac{a}{x}\right|$$
$$\left[\frac{\pi}{2} < \operatorname{arcsec}\frac{x}{a} < \pi\right].$$

532.4. $$\int \frac{1}{x^4}\operatorname{arcsec}\frac{x}{a}\,dx = -\frac{1}{3x^3}\operatorname{arcsec}\frac{x}{a} + \frac{(2x^2+a^2)}{9a^3x^3}\sqrt{x^2-a^2}$$
$$\left[0 < \operatorname{arcsec}\frac{x}{a} < \frac{\pi}{2}\right],$$
$$= -\frac{1}{3x^3}\operatorname{arcsec}\frac{x}{a} - \frac{(2x^2+a^2)}{9a^3x^3}\sqrt{x^2-a^2}$$
$$\left[\frac{\pi}{2} < \operatorname{arcsec}\frac{x}{a} < \pi\right].$$

532.9. $$\int \frac{1}{x^n}\operatorname{arcsec}\frac{x}{a}\,dx =$$
$$= -\frac{1}{(n-1)\,x^{n-1}}\operatorname{arcsec}\frac{x}{a} + \frac{a}{n-1}\int \frac{dx}{x^n\sqrt{x^2-a^2}}$$
$$\left[0 < \operatorname{arcsec}\frac{x}{a} < \frac{\pi}{2}\right] \quad [n \neq 1],$$
$$= -\frac{1}{(n-1)\,x^{n-1}}\operatorname{arcsec}\frac{x}{a} - \frac{a}{n-1}\int \frac{dx}{x^n\sqrt{x^2-a^2}}$$
$$\left[\frac{\pi}{2} < \operatorname{arcsec}\frac{x}{a} < \pi\right], \quad [n \neq 1].$$

В формулах **531—532.9**, $x^2 > a^2$.

534. $$\int \operatorname{arccsc}\frac{x}{a}\,dx = x\operatorname{arccsc}\frac{x}{a} + a\ln\left|x+\sqrt{x^2-a^2}\right|,$$
$$\left[0 < \operatorname{arccsc}\frac{x}{a} < \frac{\pi}{2}\right],$$
$$= x\operatorname{arccsc}\frac{x}{a} - a\ln\left|x+\sqrt{x^2-a^2}\right|$$
$$\left[-\frac{\pi}{2} < \operatorname{arccsc}\frac{x}{a} < 0\right].$$

534.1. $$\int x\operatorname{arccsc}\frac{x}{a}\,dx = \frac{x^2}{2}\operatorname{arccsc}\frac{x}{a} + \frac{a}{2}\sqrt{x^2-a^2}$$
$$\left[0 < \operatorname{arccsc}\frac{x}{a} < \frac{\pi}{2}\right],$$
$$= \frac{x^2}{2}\operatorname{arccsc}\frac{x}{a} - \frac{a}{2}\sqrt{x^2-a^2}$$
$$\left[-\frac{\pi}{2} < \operatorname{arccsc}\frac{x}{a} < 0\right].$$

534.2. $$\int x^2\operatorname{arccsc}\frac{x}{a}\,dx =$$
$$= \frac{x^3}{3}\operatorname{arccsc}\frac{x}{a} + \frac{ax}{6}\sqrt{x^2-a^2} + \frac{a^3}{6}\ln\left|x+\sqrt{x^2-a^2}\right|$$
$$\left[0 < \operatorname{arccsc}\frac{x}{a} < \frac{\pi}{2}\right],$$
$$= \frac{x^3}{3}\operatorname{arccsc}\frac{x}{a} - \frac{ax}{6}\sqrt{x^2-a^2} - \frac{a^3}{6}\ln\left|x+\sqrt{x^2-a^2}\right|$$
$$\left[-\frac{\pi}{2} < \operatorname{arccsc}\frac{x}{a} < 0\right].$$

534.9. $$\int x^n \operatorname{arccsc}\frac{x}{a}\,dx = \frac{x^{n+1}}{n+1}\operatorname{arccsc}\frac{x}{a} + \frac{a}{n+1}\int \frac{x^n\,dx}{\sqrt{x^2-a^2}}$$
$$\left[0 < \operatorname{arccsc}\frac{x}{a} < \frac{\pi}{2}\right],\ [n \neq -1],$$
$$= \frac{x^{n+1}}{n+1}\operatorname{arccsc}\frac{x}{a} - \frac{a}{n+1}\int \frac{x^n\,dx}{\sqrt{x^2-a^2}}$$
$$\left[-\frac{\pi}{2} < \operatorname{arccsc}\frac{x}{a} < 0\right],\ [n \neq -1].$$

535.1. $$\int \frac{1}{x}\operatorname{arccsc}\frac{x}{a}\,dx =$$
$$= -\left(\frac{a}{x} + \frac{1}{2\cdot 3\cdot 3}\frac{a^3}{x^3} + \frac{1\cdot 3}{2\cdot 4\cdot 5\cdot 5}\frac{a^5}{x^5} + \frac{1\cdot 3\cdot 5}{2\cdot 4\cdot 6\cdot 7\cdot 7}\frac{a^7}{x^7} + \ldots\right)$$
$$\left[-\frac{\pi}{2} < \operatorname{arccsc} x < \frac{\pi}{2}\right].$$

535.2. $$\int \frac{1}{x^2}\operatorname{arccsc}\frac{x}{a}\,dx = -\frac{1}{x}\operatorname{arccsc}\frac{x}{a} - \frac{\sqrt{x^2-a^2}}{ax}$$
$$\left[0 < \operatorname{arccsc}\frac{x}{a} < \frac{\pi}{2}\right],$$
$$= -\frac{1}{x}\operatorname{arccsc}\frac{x}{a} + \frac{\sqrt{x^2-a^2}}{ax}$$
$$\left[-\frac{\pi}{2} < \operatorname{arccsc}\frac{x}{a} < 0\right].$$

535.3. $$\int \frac{1}{x^3}\operatorname{arccsc}\frac{x}{a}\,dx =$$
$$= -\frac{1}{2x^2}\operatorname{arccsc}\frac{x}{a} - \frac{\sqrt{x^2-a^2}}{4ax^2} - \frac{1}{4a^2}\arccos\left|\frac{a}{x}\right|$$
$$\left[0 < \operatorname{arccsc}\frac{x}{a} < \frac{\pi}{2}\right],$$
$$= -\frac{1}{2x^2}\operatorname{arccsc}\frac{x}{a} + \frac{\sqrt{x^2-a^2}}{4ax^2} + \frac{1}{4a^2}\arccos\left|\frac{a}{x}\right|$$
$$\left[-\frac{\pi}{2} < \operatorname{arccsc}\frac{x}{a} < 0\right].$$

535.4. $$\int \frac{1}{x^4}\operatorname{arccsc}\frac{x}{a}\,dx = -\frac{1}{3x^3}\operatorname{arccsc}\frac{x}{a} - \frac{(2x^2+a^2)}{9a^3x^3}\sqrt{x^2-a^2}$$
$$\left[0 < \operatorname{arccsc}\frac{x}{a} < \frac{\pi}{2}\right],$$
$$= -\frac{1}{3x^3}\operatorname{arccsc}\frac{x}{a} + \frac{(2x^2+a^2)}{9a^3x^3}\sqrt{x^2-a^2}$$
$$\left[-\frac{\pi}{2} < \operatorname{arccsc}\frac{x}{a} < 0\right].$$

535.9. $$\int \frac{1}{x^n} \operatorname{arccsc} \frac{x}{a}\, dx =$$

$$= -\frac{1}{(n-1)\, x^{n-1}} \operatorname{arccsc} \frac{x}{a} + \frac{a}{n-1} \int \frac{dx}{x^n \sqrt{x^2-a^2}}$$

$$\left[-\frac{\pi}{2} < \operatorname{arccsc} \frac{x}{a} < 0\right], \quad [n \neq 1],$$

$$= -\frac{1}{(n-1)\, x^{n-1}} \operatorname{arccsc} \frac{x}{a} - \frac{a}{n-1} \int \frac{dx}{x^n \sqrt{x^2-a^2}}$$

$$\left[0 < \operatorname{arccsc} \frac{x}{a} < \frac{\pi}{2}\right], \quad [n \neq 1].$$

В формулах 534—535.9 $x^2 > a^2$.