7. $$\int_0^{\pi} x\cos(2m+1)x\,dx = 0$$ ГХ2 (332)(12a)

8. $$\int_0^{\pi} \sin^{v-1} x\cos ax\,dx = \frac{\pi\cos\frac{a\pi}{2}}{2^{\nu-1}\nu B\left(\frac{\nu+a+1}{2}, \frac{\nu-a+1}{2}\right)}$$ $[Re\ \nu > 0]$ Лб V 121(68)и, Вт 337и

9. $$\int_0^{\pi/2} \sin^{v-1} x\cos ax\,dx = \frac{\pi}{2^{\nu}\nu B\left(\frac{\nu+a+1}{2}, \frac{\nu-a+1}{2}\right)}$$ $[Re\ \nu > 0]$ ГХ2 (332)(9c)

10. $$\int_0^{\pi/2} \sin^{\nu-2} x\cos\nu x\,dx = \frac{1}{\nu-1}\sin\frac{\nu\pi}{2}$$ $[Re\ \nu > 1]$ Х2 (332)(9c)

11. $$\int_0^{\pi} \sin^{\nu} x\cos\nu x\,dx = \frac{\pi}{2^{\nu}}\cos\frac{\nu\pi}{2}$$ $[Re\ \nu > -1]$ Лб V 121(70)и

12. $$\int_0^{\pi} \sin^{2n} x\cos 2mx\,dx = 2\int_0^{\pi/2} \sin^{2n} x\cos 2mx\,dx = \frac{(-1)^m}{2^{2n}}\binom{2n}{n-m}\pi \qquad [n \geqslant m]$$
$$= 0 \qquad [n < m]$$
Би (40)(16), ГХ2 (332)(12b)

13.[7] $$\int_0^{\pi} \sin^{2n+1} x\cos 2mx\,dx =$$
$$= 2\int_0^{\pi/2} \sin^{2n+1} x\cos 2mx\,dx = \frac{(-1)^m 2^{n+1} n!(2n+1)!!}{(2m-2n-3)!!(2m+2n+1)!!} \qquad [n \leqslant m-1]$$
$$= \frac{(-1)^{n+1}2^{n+1}n!(2m-2n+3)!!(2n+1)!!}{(2m+2n+1)!!} \qquad [n < m-1]$$
ГХ2 (332)(12c)

14. $$\int_0^{\pi/2} \cos^{\nu-2} x\sin\nu x\,dx = \frac{1}{\nu-1}$$ $[Re\ \nu > 1]$ ГХ2 (332)(16c), Фх II 152

15. $$\int_0^{\pi} \cos^m \sin nx\,dx = [1-(-1)^{m+n}]\int_0^{\pi/2} \cos^m x\sin nx\,dx =$$
$$= [1-(-1)^{m+n}]\left\{\sum_{k=0}^{r-1}\frac{m!}{(m-k)!}\frac{(m+n-2k-2)!!}{(m+n)!!} + s\frac{m!(n-m-2)!!}{(m+n)!!}\right\}$$
$$\left[r = \begin{cases} m, & \text{если } m \leqslant n \\ n, & \text{если } m \geqslant n \end{cases}, \quad s = \begin{cases} 2, & \text{если } n-m = 4l+2 > 0 \\ 1, & \text{если } n-m = 2l+1 > 0 \\ 0, & \text{если } n-m = 4l \text{ или } n-m < 0 \end{cases}\right]$$ ГХ2 (332)(13a)

16. $$\int_0^{\pi/2} \cos^n x\sin nx\,dx = \frac{1}{2^{n+1}}\sum_{k=1}^{n}\frac{2^k}{k}$$ Фх II 153