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

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

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

10. $$\int_0^{\pi/2} \sin^{\nu-2} x \cos \nu x\,dx = \frac{1}{\nu-1}\sin\frac{\nu\pi}{2} \qquad [\operatorname{Re}\nu > 1]$$ ГХ2 (332)(16b), Фх II 15 2

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

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

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

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

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