

$$14. \int_0^{\infty} \frac{a dx}{a^2 + x^2} = \begin{cases} \frac{\pi}{2}, & a > 0; \\ 0, & a = 0; \\ \frac{-\pi}{2}, & a < 0 \end{cases}$$

$$15. \int_0^{\infty} \frac{\sin ax}{x} dx = \begin{cases} \frac{\pi}{2}, & a > 0; \\ \frac{-\pi}{2}, & a < 0 \end{cases}$$

$$16. \int x^2 \sin ax dx = \frac{2x}{a^2} \sin ax - \frac{a^2 x^2 - 2}{a^3} \cos ax$$

$$17. \int x^2 \cos ax dx = \frac{2x}{a^2} \cos ax + \frac{a^2 x^2 - 2}{a^3} \sin ax$$

$$18. \int e^{ax} \sin^2 bx dx = \frac{e^{ax}}{a^2 + 4b^2} \left[(a \sin bx - 2b \cos bx) \sin bx + \frac{2b^2}{a} \right]$$

$$19. \int e^{ax} \cos^2 bx dx = \frac{e^{ax}}{a^2 + 4b^2} \left[(a \cos bx + 2b \sin bx) \cos bx + \frac{2b^2}{a} \right]$$