

### Formula List

- (1)  $\int x \cos ax \, dx = \frac{1}{a^2} \cos ax + \frac{x}{a} \sin ax$
- (2)  $\int x \sin ax \, dx = \frac{1}{a^2} \sin ax - \frac{x}{a} \cos ax$
- (3)  $\int x^2 \cos ax \, dx = \frac{2x}{a^2} \cos ax + \frac{a^2 x^2 - 2}{a^3} \sin ax$
- (4)  $\int x^2 \sin ax \, dx = \frac{2x}{a^2} \sin ax - \frac{a^2 x^2 - 2}{a^3} \cos ax$
- (5)  $\int e^{ax} \cos bx \, dx = \frac{e^{ax}}{a^2 + b^2} (a \cos bx + b \sin bx)$
- (6)  $\int e^{ax} \sin bx \, dx = \frac{e^{ax}}{a^2 + b^2} (a \sin bx - b \cos bx)$
- (7)  $\int \cos^2 ax \, dx = \frac{1}{2}x + \frac{1}{4a} \sin 2ax$
- (8)  $\int \sin^2 ax \, dx = \frac{1}{2}x - \frac{1}{4a} \sin 2ax$
- (9)  $\int \sin ax \sin bx \, dx = -\frac{1}{2(a+b)} \sin((a+b)x) + \frac{1}{2(a-b)} \sin((a-b)x)$
- (10)  $\int \cos ax \cos bx \, dx = \frac{1}{2(a+b)} \sin((a+b)x) + \frac{1}{2(a-b)} \sin((a-b)x)$
- (11)  $\int \sin ax \cos bx \, dx = -\frac{1}{2(a+b)} \cos((a+b)x) - \frac{1}{2(a-b)} \cos((a-b)x)$