

$$7) \int \frac{t}{t^2+16} dt$$

$$(t^2)^2 + 4^2$$

$$a=4$$

$$u=t^2$$

$$du=2t dt$$

$$\frac{1}{2} du = t dt$$

$$\frac{1}{2} \int \frac{1}{u^2+a^2} du$$

$$\frac{1}{2} \cdot \frac{1}{4} \tan^{-1}\left(\frac{t^2}{4}\right) + C$$

$$\frac{1}{8} \tan^{-1}\left(\frac{t^2}{4}\right) + C$$

$$* 8) \int \frac{1}{x^2+4x+13} dx$$

* Complete the Square

$$x^2+4x + \boxed{4} + 13 - \boxed{4}$$

$$(x+2)^2 + 9$$

$$\int \frac{1}{(x+2)^2+9} dx$$

$$u=x+2$$

$$a=3$$

$$du=dx \quad \frac{1}{3} \arctan\left(\frac{u}{3}\right) + C$$

$$\int \frac{1}{u^2+3^2} = \frac{1}{3} \arctan\left(\frac{x+2}{3}\right) + C$$