

3. (3 Points) Use the method of partial fractions to find the indefinite integral $\int \frac{dx}{x^2+x}$.

$$\frac{1}{x^2+x} = \frac{1}{x(x+1)} = \frac{A}{x} + \frac{B}{x+1}$$

$$1 = A(x+1) + Bx$$

$$x=0, \quad 1=A.$$

$$x=-1, \quad 1=-B \quad B=-1.$$

$$\int \frac{1}{x^2+x} dx = \int \frac{1}{x} + \frac{-1}{x+1} dx = \boxed{\ln|x| - \ln|x+1| + C}$$