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By signing here, you agree to abide by the **Georgia Tech Honor Code**: *I commit to uphold the ideals of honor and integrity by refusing to betray the trust bestowed upon me as a member of the Georgia Tech Community.*

Sign Your Name: \_\_\_\_\_

Please clearly organize your work, show all steps, simplify all answers, and BOX your answers.

1. (4 points) Fill in the blanks using arbitrary constants  $A, B, C, D, \dots$  (as many as you need) to set up a partial fraction decomposition for the given rational function. Leave any unused boxes blank. *Do not integrate!*

$$\frac{x+4}{x^2(x^2+3)^2} = \boxed{\phantom{0}} + \boxed{\phantom{0}} + \boxed{\phantom{0}} + \boxed{\phantom{0}} + \boxed{\phantom{0}}$$

2. (8 points) Use partial fractions to find the general anti-derivative of  $f(x) = \frac{1}{x(x^2+1)}$ .

3. (8 points) Evaluate.

$$\int \frac{1}{x^2\sqrt{x^2+1}} dx$$