

25.

$$\begin{array}{r}
 x + 1 \overline{) \begin{array}{r} x^2 \\ x^2 + x \\ -x \\ -x - 1 \\ \hline 1 \end{array}} \\
 \hline
 \end{array}$$

By long division, $\frac{x^2}{x+1} = x - 1 + \frac{1}{x+1}$. Thus,

$$\begin{aligned}
 \int \frac{x^2}{x+1} dx &= \int \left(x - 1 + \frac{1}{x+1} \right) dx \\
 &= \frac{1}{2}x^2 - x + \ln|x+1| + C
 \end{aligned}$$

$$26. \int \frac{y}{y+2} dy = \int \left(1 - \frac{2}{y+2} \right) dy = y - 2 \ln|y+2| + C$$

27.

$$\begin{array}{r}
 x^2 + 1 \overline{) \begin{array}{r} x^3 \\ x^3 + x \\ -x \end{array}} \\
 \hline
 \end{array}$$

By long division, $\frac{x^3}{x^2+1} = x - \frac{x}{x^2+1}$. Thus,

$$\int \frac{x^3}{x^2+1} dx = \int x dx - \int \frac{x dx}{x^2+1}$$