

$$\textcircled{1} \int \frac{1}{3x+2} dx$$

$$u = 3x+2$$

$$du = 3dx$$

$$\frac{1}{3} du = dx$$

$$\frac{1}{3} \int \frac{1}{u} du$$

$$= \frac{1}{3} \ln|3x+2| + C$$

$$\textcircled{2} \int \frac{x^2+2x}{x^3+3x^2-4} dx$$

$$u = x^3 + 3x^2 - 4$$

$$du = 3x^2 + 6x dx$$

$$du = 3(x^2 + 2x) dx$$

$$\frac{1}{3} du = (x^2 + 2x) dx$$

$$= \frac{1}{3} \int \frac{1}{u} du$$

$$= \frac{1}{3} \ln|x^3+3x^2-4| + C$$

$$3) \int \frac{x^3-6x-20}{x+5} dx$$

-5		0	-6	-20
	↓	-5	25	-95
		1	-5	19
				-115

$$\int \left[x^2 - 5x + 19 - \frac{115}{x+5} \right] dx$$

$$= \frac{x^3}{3} - \frac{5x^2}{2} + 19x - 115 \cdot \ln|x+5| + C$$