

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

$$u = x^2 + 9$$

$$du = 2x dx$$

$$\frac{1}{2} du = x dx$$

$$\frac{1}{2} \int \frac{du}{\sqrt{u}}$$

$$\frac{1}{2} \int u^{-1/2} du$$

$$\frac{1}{2} \cdot \frac{u^{1/2}}{1/2}$$

$$= \sqrt{x^2+9} + C$$

$$\textcircled{13} \int \frac{x+1}{(x^2+2x)^3} dx$$

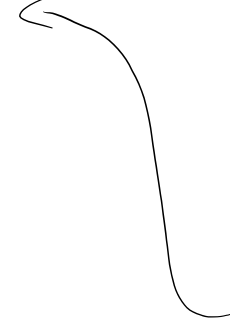
$$u = x^2 + 2x$$

$$du = 2x + 2 dx$$

$$\frac{1}{2} du = x+1 dx$$

$$\frac{1}{2} \int \frac{du}{u^3} = \frac{1}{2} \int u^{-3} du$$

$$= \frac{1}{2} \cdot -\frac{1}{2} u^{-2}$$

$$- \frac{1}{4} (x^2 + 2x)^{-2} + C$$


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$$\int \sqrt{4x-1} \, dx$$

$$u = 4x - 1$$

$$du = 4 \, dx$$

$$\frac{1}{4} du = dx$$

$$\frac{1}{4} \int \sqrt{u} \, du$$

$$\frac{1}{4} \int u^{1/2} \, du$$

$$\frac{1}{4} \cdot \frac{2}{3} \cdot u^{3/2}$$

$$\frac{1}{6} (4x-1)^{3/2} + C$$

