Discussion Activity about Indefinite Integrals, to Accompany H71 (Section 5.1 Concepts)

One of these four solutions is correct.

Each of the other solutions has at least one invalid step.

The equal signs are all numbered. Discuss the validity or invalidity of each equal sign.

Conclude by saying which solution is the correct one.

$$(\boldsymbol{a}) \quad \int x(x^2+1)dx \underset{(1)}{=} \frac{x^2}{2}\left(\frac{x^3}{3}+0\right)+C \underset{(2)}{=} \frac{x^5}{6}+C$$

$$(\boldsymbol{b}) \quad \int x(x^2+1)dx \underset{(1)}{=} \frac{x^2}{2}\left(\frac{x^3}{3}+x\right)+C \underset{(2)}{=} \frac{x^5}{6}+\frac{x^3}{2}+C$$

$$(\boldsymbol{c}) \quad \int x(x^2+1)dx \underset{(1)}{=} \int x^3+xdx \underset{(2)}{=} \frac{x^4}{4}+1+C$$

$$(\boldsymbol{d}) \quad \int x(x^2+1)dx \underset{(1)}{=} \int x^3+xdx \underset{(1)}{=} \frac{x^4}{4}+\frac{x^2}{2}+C$$

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