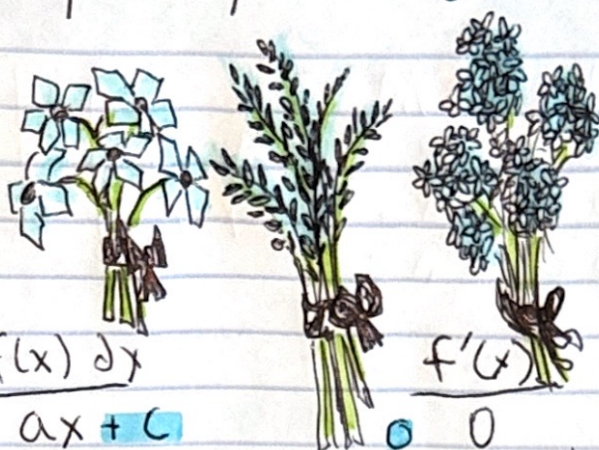


Calc II

1/12/2026

216 - 368 - 2881 (15)

REVIEW



$f(x)$

• a

• x^N

• $\frac{1}{x}$

• e^x

• $\ln(x)$

• $\sin(x)$

• $\cos(x)$

• $\tan(x)$

• $\sinh(x)$

• $\cosh(x)$

• $\text{Arctan}(x)$

• $\text{ArcSin}(x)$

$\int f(x) dx$

• $ax + C$

• $\frac{x^{N+1}}{N+1} + C$

• $\ln|x| + C$

• $e^x + C$

• $\boxed{?} + C$

• $-\cos(x) + C$

• $\sin(x) + C$

• $\ln|\sec x| + C$

• $\cosh(x) + C$

• $\sinh(x) + C$

• $\boxed{?} + C$

• $\boxed{?} + C$

$f'(x)$

• 0

• Nx^{N-1}

• $-\frac{1}{x^2}$

• e^x

• $\frac{1}{x}$

• $\cos x$

• $-\sin(x)$

• $\sec^2(x)$

• $\cosh(x)$

• $\sinh(x)$

• $\frac{1}{1+x^2}$

• $\frac{1}{\sqrt{1-x^2}}$

Integration by Substitution → Quiz

Substitution

$$\textcircled{1} \int (3-2x)^3 dx \quad U = 3-2x \quad dx = \frac{du}{-2}$$

$$= \int U^3 \frac{du}{-2} = -\frac{1}{2} \left(\frac{U^4}{4} \right) = -\frac{1}{8} (3-2x)^4 + C$$

$$\textcircled{2} \int x(x^2+3)^{17} dx \quad U = x^2+3 \quad dx = \frac{du}{2x}$$

$$= \int x(u)^{17} \frac{du}{2x} = \frac{1}{2} \frac{U^{18}}{18} = \frac{1}{36} (x^2+3)^{18} + C$$

$$\textcircled{3} \int \sin(3x+4) dx \quad U = 3x+4$$

$$du = 3dx$$

$$\int \sin(u) \frac{du}{3} = -\frac{1}{3} \cos(u) \quad dx = \frac{du}{3}$$

$$\downarrow$$

$$-\frac{1}{3} \cos(3x+4) + C$$

$$\textcircled{4} \int \frac{1}{\sqrt{x}(\sqrt{x}+9)^2} dx \quad U = \sqrt{x}+9$$

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

$$dx = 2\sqrt{x} du$$

$$= \int \frac{1}{\cancel{\sqrt{x}}(u)^2} = 2 \int \frac{1}{u^2} du = -\frac{2}{u} = -\frac{2}{(\sqrt{x}+9)} + C$$

$$\textcircled{5} \int \frac{1}{1-e^x} dx \cdot \frac{e^x}{e^x} = \int \frac{e^x}{e^x-1} dx \quad U = e^x-1$$

$$= \int \frac{e^x}{u} \frac{du}{e^x} = \int \frac{1}{u} du = \ln|u| = \boxed{\ln|e^x-1|} \quad du = e^x dx$$

$$dx = \frac{du}{e^x}$$