

$$\sqrt{\cot x} \csc^2 x dx$$

$$u = \cot x$$

$$-1 du = -\csc^2 x$$

$$\int \sqrt{u} \csc^2 x (-du)$$

$$-1 \left[\frac{u^{3/2}}{3/2} \right] = \frac{-2u^{3/2}}{3}$$

$$= \frac{2}{3} (\cot x)^{3/2} + C //$$

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$$\int_0^{\pi/2} \frac{\tan t}{\cos^2 t} dt$$

$$u = \cos t$$

$$du = -\sin t$$

$$-du = \sin t$$

$$\int \frac{-1}{u^2} \cdot \frac{-1}{-1} du \rightarrow \int_1^{\sqrt{3}/2} -\frac{1}{u^2} du$$

$$\int_1^{\sqrt{3}/2} u^{-2} du = -(-u^{-1})^{\sqrt{3}/2}$$

$$\frac{2\sqrt{3}}{3} - 1 + C //$$

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$$\int_1^4 \frac{e^u}{x \sqrt{\ln x}} dx$$

$$u = \ln x$$

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

$$x du = dx$$

$$\int_1^4 \frac{1}{\sqrt{u}} du \rightarrow \int_1^4 u^{-1/2} du = 2u^{1/2}$$

$$= 2 //$$

Section 7-1

$$\int x e^{x/2} dx$$

$$u = x \quad du = 1$$

$$v = 2e^{x/2}$$

$$x(2e^{x/2}) - \int 2e^{x/2} (1) dx \rightarrow \int x e^{x/2} (2 du) \rightarrow 2 \int x e^{x/2}$$

$$u = \frac{x}{2} \quad \frac{2}{4} = \frac{1}{2}$$

$$2(x e^{x/2}) - 2(2 e^{x/2}) + C$$

$$2x e^{x/2} - 4 e^{x/2} + C$$