

$$4 \int \operatorname{cosec} 2x \, dx = ?$$

☐ A $\ln|1 + \sec^2 x| + c$

☐ B $\ln|\tan x| + c$

☐ C $\ln|1 + \tan^2 x| + c$

☒ $\ln|\sec^2 x - 1| + c$

$$\int \frac{dx}{x\sqrt{x^2 - 1}} = ?$$

☒ $\sec^{-1} x + c$

☐ B $\cos^{-1} x + c$

☐ C $\operatorname{cosec}^{-1} x + c$

☐ D $\sin^{-1} x + c$

$$\int \frac{x}{\cos^2 x} \, dx = ?$$

☐ A $x \tan x - \ln|\cos x| + c$

☒ $x \tan x - \ln|\sec x| + c$

☐ C $x \tan x - \ln|\sin x| + c$

☐ D $x \sec x - \ln|\tan x| + c$

$$\int \frac{dx}{2x^2 + 8x + 12} = ?$$

☐ A $\frac{1}{\sqrt{2}} \tan^{-1} \left(\frac{x}{\sqrt{2}} \right) + c$

☒ $\frac{1}{2\sqrt{2}} \tan^{-1} \left(\frac{x+2}{\sqrt{2}} \right) + c$

☐ C $\frac{1}{2} \tan^{-1} \left(\frac{x+2}{\sqrt{2}} \right) + c$

☐ D $\frac{1}{2\sqrt{2}} \tan^{-1} \left(\frac{x}{2} \right) + c$

$$\int e^x \left(\frac{1 + \frac{1}{2} \sin 2x}{\cos^2 x} \right) dx = ?$$

☐ A $e^x \sec^2 x + c$

☐ B $e^x \operatorname{cosec} x + c$

☒ $e^x \tan x + c$

☐ D $e^x \cos x + c$

$$\int_0^{\infty} \frac{x dx}{1+x^4} = ?$$

$$\frac{\pi}{4}$$

$$\frac{\pi}{2}$$

$$\frac{\pi^2}{4}$$

$$\frac{\pi^2}{16}$$

$$\int_0^{\pi/4} \sin x \cos x \, dx = ?$$

☒ $\frac{1}{4}$

☐ B $\frac{1}{6}$

☐ C $\frac{1}{8}$

☐ D $\frac{1}{2}$