

LAB QUIZ 5

1.

Which option equals $\int_0^{\frac{1}{2}} \sin^{-1} x \, dx$?

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- a) $\frac{\pi}{12} - \frac{\sqrt{3}}{2} + 1$
- b) $\frac{\pi}{4} + \frac{\sqrt{3}}{2}$
- c) $\frac{\pi}{12} + \frac{\sqrt{3}}{2} - 1$
- d) $\frac{\pi}{3} - 1$
- e) $\frac{\pi}{12} - \frac{\sqrt{3}}{2} - 1$

2.

Use a substitution to find $\int \sqrt{\tan x} \sec^4 x \, dx$.

- a) $\frac{2}{15} (\tan x)^{\frac{3}{2}} \sec^5 x + C$
- b) $\frac{3}{2} (\tan x)^{\frac{3}{2}} + \frac{2}{9} (\tan x)^{\frac{9}{2}} + C$
- c) $\frac{2}{3} (\tan x)^{\frac{3}{2}} + \frac{2}{7} (\tan x)^{\frac{7}{2}} + C$
- d) $2 \sec^6 x \sqrt{\tan x} + C$
- e) None of the above
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3.

Calculate the following integral: $\int_0^{\pi/4} \sec^4(x) \tan^2(x) dx$

- a. $\frac{2}{15}$
- b. $-\frac{4}{15}$
- c. $-\frac{2}{15}$
- d. $\frac{5}{21}$
- e. $-\frac{4}{21}$
- f. None

4.

Which option equals $\int_0^1 x \tan^{-1} x \, dx$?



- a) $\frac{\pi}{4} - \frac{1}{2}$
- b) $-\frac{1}{2}$
- c) $\frac{\pi}{8} - \frac{1}{2}$
- d) $\frac{1}{2} \left(\frac{\pi}{4} + 1 \right)$
- e) $\frac{\pi}{4}$

5.

$$\int \frac{1}{x\sqrt{4-x^2}} dx = \quad ?$$

a. $\frac{1}{2} \ln \left| \frac{2}{x} - \frac{2}{\sqrt{4-x^2}} \right| + C$

b. $-\frac{1}{2} \ln \left| \frac{2}{x} + \frac{2}{\sqrt{4-x^2}} \right| + C$

c. $\ln \left| \frac{x}{2} + \frac{\sqrt{4-x^2}}{2} \right| + C$

d. $-\frac{1}{2} \ln \left| \frac{x}{2} + \frac{\sqrt{4-x^2}}{2} \right| + C$

e. $\frac{1}{2} \ln \left| \frac{2}{x} - \frac{\sqrt{4-x^2}}{x} \right| + C$