QUIZ 1: INDEFINITE INTEGRAL

Instructions: write your solutions to the following two questions on separate sheets of paper. Show all work to receive credit. You will have 25 minutes to complete the Quiz and 10 minutes to upload your solutions to the Crowdmark assessment "Quiz 1" located in the Assignments tab of your **Discussion** iLearn.

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(1) [3pts] Evaluate the indefinite integral:

$$\int x\sqrt{x}\,dx.$$

(2) [3pts] Evaluate the indefinite integral:

$$\int \left(2x - 3\right) \cdot \left(\frac{1}{x} + 1\right) dx.$$

For both problems you should refer to Theorem 5.1.2:

Theorem 5.1.2   Derivatives and Antiderivatives

Common Differentiation Rules   Common Indefinite Integral Rules

1. $\frac{d}{dx}\left(cf(x)\right) = c \cdot f'(x)$

1. $\int c \cdot f(x)\,dx = c \cdot \int f(x)\,dx$

2. $\frac{d}{dx}\left(f(x) \pm g(x)\right) = f'(x) \pm g'(x)$

2. $\int \left(f(x) \pm g(x)\right) dx = \int f(x)\,dx \pm \int g(x)\,dx$

3. $\frac{d}{dx}\left(C\right) = 0$

3. $\int 0\,dx = C$

4. $\frac{d}{dx}\left(x\right) = 1$

4. $\int 1\,dx = \int dx = x + C$

5. $\frac{d}{dx}\left(x^n\right) = n \cdot x^{n-1}$

5. $\int x^n\,dx = \frac{1}{n+1}x^{n+1} + C \quad (n \neq -1)$

6. $\frac{d}{dx}\left(\sin x\right) = \cos x$

6. $\int \cos x\,dx = \sin x + C$

7. $\frac{d}{dx}\left(\cos x\right) = -\sin x$

7. $\int \sin x\,dx = -\cos x + C$

8. $\frac{d}{dx}\left(\tan x\right) = \sec^2 x$

8. $\int \sec^2 x\,dx = \tan x + C$

9. $\frac{d}{dx}\left(\csc x\right) = -\csc x \cot x$

9. $\int \csc x \cot x\,dx = -\csc x + C$

10. $\frac{d}{dx}\left(\sec x\right) = \sec x \tan x$

10. $\int \sec x \tan x\,dx = \sec x + C$

11. $\frac{d}{dx}\left(\cot x\right) = -\csc^2 x$

11. $\int \csc^2 x\,dx = -\cot x + C$

12. $\frac{d}{dx}\left(e^x\right) = e^x$

12. $\int e^x\,dx = e^x + C$

13. $\frac{d}{dx}\left(a^x\right) = \ln a \cdot a^x$

13. $\int a^x\,dx = \frac{1}{\ln a} \cdot a^x + C$

14. $\frac{d}{dx}\left(\ln x\right) = \frac{1}{x}$

14. $\int \frac{1}{x}\,dx = \ln |x| + C$