

Determine if the following are integrable over the given interval. If so, evaluate. SHOW ALL WORK.

REMINDER: Radian mode may be necessary when using the calculator to check problems involving trig functions.

1.  $\int_0^1 4x^3 + 3x^2 - 2x + 1 \, dx$

2.  $\int_{-1}^0 -x^4 - x^3 + x^2 - x + 3 \, dx$

3.  $\int_{-1}^1 -\frac{1}{x^2} \, dx$

4.  $\int_{-2}^2 \frac{1}{3}x^3 + \frac{1}{x^3} \, dx$

5.  $\int_{-1}^{-3} \frac{1}{3}x^3 + \frac{1}{x^3} - 2 \, dx$

6.  $\int_2^1 3x^5 - 12x^2 + \frac{1}{2\sqrt{x}} \, dx$

7.  $\int_1^8 -14x^6 + \frac{3}{x^2} - \frac{4}{\sqrt[3]{x^2}} \, dx$

8.  $\int_1^2 \frac{1}{x^3} - \frac{1}{x^2} + \frac{1}{x} \, dx$

$$9. \int_1^4 -4x^3 + \sqrt{x} - \frac{2}{x} + \frac{4}{x^2} dx$$

$$10. \int_0^3 -2e^x + 6x^2 dx$$

$$11. \int_{\ln 1}^{\ln 2} 4e^x + \frac{1}{e^x} dx$$

$$12. \int_0^{\frac{\pi}{2}} 4 \cos x dx$$

$$13. \int_{\pi}^{2\pi} 7 \sin x + 3 dx$$

$$14. \int_1^{\pi} -2 \cos x + \frac{4}{x} - 3e^x dx$$

$$15. \int_{\frac{\pi}{4}}^{\frac{\pi}{2}} 4 \sin x (1 + \sin x) - 4 \cos x (1 - \cos x) - \frac{2}{x} + 3x^2 + \frac{1}{x^2} dx \quad (\text{Hint: Use identities to simplify, then integrate.})$$