

Solutions to Recognizing Integrals Worksheet

1. A. $\int (x^3 + 1)dx = \frac{1}{4}x^4 + x + C$

1. B. $\int x^2(x^3 + 1)^4 dx = \frac{1}{15}(x^3 + 1)^5 + C$ (Substitution $w = x^3 + 1$)

1. C. Can't be done

1. D. $\int (x^3 + 1)^2 dx = \frac{1}{7}x^7 + \frac{1}{2}x^4 + x + C$

2. A. Can't be done

2. B. $\int \frac{e^x}{3+e^x} dx = \ln(3 + e^x) + C$ (Substitution $w = 3 + e^x$)

2. C. $\int (e^x + 3)dx = e^x + 3x + C$

2. D. $\int \frac{\ln(e^{2x})}{x^2} dx = \ln(x^2) + C$ (Rules of logs and substitution $w = x^2$)

3. A. $\int \sqrt{x}(1 - x^2)dx = \frac{2}{3}x^{3/2} - \frac{2}{7}x^{7/2} + C$

3. B. Can't be done

3. C. Involves trig identities. We'll learn how to do this later.

3. D. $\int \frac{x dx}{\sqrt{1-x^2}} = -\sqrt{1-x^2} + C$ (Substitution $w = 1 - x^2$)