

Calculus

Chapter 6 – Final Review

Learning Target: I can apply general integration rules.

Learning Target: I can use integrate using Substitution.

Learning Target: I can use integrate using Integration by Parts.

Evaluate each integral using the appropriate rules and techniques.

1) $\int_{-1}^2 x(x^2 - 4) dx$

2) $\int (x^2 + 1)^3 dx$

3) $\int_0^1 x^2(x^3 + 1)^3 dx$

4) $\int \left(x + \frac{1}{x}\right)^2 dx$

5) $\int \frac{x^2}{\sqrt{x^3 + 3}} dx$

6) $\int x(1 - 3x^2)^4 dx$

7) $\int \frac{x+3}{(x^2 + 6x - 5)^2} dx$

8) $\int \sin^3 x \cos x dx$

9) $\int xe^x dx$

10) $\int_0^3 \frac{1}{\sqrt{1+x}} dx$

11) $\int x^4 \ln x dx$

12) $\int_3^6 \frac{x}{3\sqrt{x^2 - 8}} dx$

13) $2\pi \int_0^1 (1+y)\sqrt{1-y} dy$

14) $\int x \cos x dx$

15) $\int \frac{\ln 2x}{x^2} dx$

16) $\int 3^{2x+1} dx$

17) $2\pi \int_{-1}^0 x^2 \sqrt{x+1} dx$

18) $\int \frac{e^{4x} - e^{2x} + 1}{e^x} dx$

19) $\int_0^\pi \cos \frac{x}{2} dx$

20) $\int_{-\pi/4}^{\pi/4} \sin 2x dx$

21) $\int_0^4 \frac{1}{\sqrt{25-x^2}} dx$

22) $\int_0^{\sqrt[2]{5}} \frac{1}{4+9x^2} dx$

23) $\int \frac{2}{(2t-1)^2 + 4} dt$

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