

Calculus II Review Two

Please show your work on all problems. Calculators are not permitted on this exam.

1. $\int x^4 e^x dx$

2. $\int_0^{\pi/4} \sin^2(x) \cos^3(x) dx$

3. $\int_0^3 \frac{x}{\sqrt{36-x^2}} dx$

4. $\int \frac{x^2 - x + 6}{x^3 + 3x} dx$

5. $\int_7^{\infty} \frac{1}{x^3} dx$

Answers

1. $x^4 e^x - 4x^3 e^x + 12x^2 e^x - 24x e^x + 24e^x + C$

2. $\frac{7}{60\sqrt{2}}$

3. $6 - 3\sqrt{3}$

4. $2 \ln |x| - \frac{1}{2} \ln |x^2 + 3| - \frac{1}{\sqrt{3}} \tan^{-1} \left(\frac{x}{\sqrt{3}} \right) + C$

5. $\frac{1}{98}$