

Answers to Practice Exam 3 for the First Midterm

1.

$$\int \frac{9x^{17}}{1+x^{36}} dx = \boxed{\frac{1}{2} \tan^{-1}(x^{18}) + C}$$

2.

$$\int \ln(1+4x^2) dx = \boxed{x \ln(1+4x^2) - 2x + \tan^{-1} 2x + C}$$

3.

$$\int \frac{\tan^3 x}{\sec^2 x} dx = \boxed{\ln |\sec x| + \frac{1}{2} \cos^2 x + C}$$

4.

$$\int \frac{4x^3 - 24x^2 + 51x - 26}{x^4 - 6x^3 + 13x^2} dx = \boxed{3 \ln |x| + \frac{2}{x} + \frac{1}{2} \ln |x^2 - 6x + 13| - \frac{1}{2} \tan^{-1} \left(\frac{x-3}{2} \right) + C}$$

5. For $x < -1.25$, we have that

$$\int \frac{\sqrt{16x^2 - 25}}{x} dx = \boxed{\sqrt{16x^2 - 25} + 5 \sec^{-1} \left(\frac{4x}{5} \right) + C}$$