

## Answers to Practice Exam 4 for the First Midterm

1.

$$\int \frac{\cos 2x}{\sqrt{9 + \sin 2x}} dx = \boxed{\sqrt{9 + \sin 2x} + C}$$

2.

$$\int \sin^{-1}(3x) dx = \boxed{x \sin^{-1} 3x - \sqrt{1 - 9x^2} + C}$$

3.

$$\int \sec^6 5x dx = \boxed{\frac{1}{25} \tan^5 5x + \frac{2}{15} \tan^3 5x + \frac{1}{5} \tan 5x + C}$$

4.

$$\int \frac{7x^3 - 22x^2 - 9x - 180}{x^4 - 81} dx = \boxed{5 \ln |x + 3| - 2 \ln |x - 3| + 2 \ln |x^2 + 9| - \frac{1}{3} \tan^{-1} \left( \frac{x}{3} \right) + C}$$

5. For  $x > 1$ , we have that

$$\int \frac{1}{\sqrt{9x^2 + 6x - 15}} dx = \boxed{\frac{1}{3} \ln \left| 3x + 1 + \sqrt{9x^2 + 6x - 15} \right| + C}$$