

Provide both a clear and organized presentation. Completely answer each question, give exact values only, and show all of your work. Only a scientific calculator can be used on this exam. Each question is worth 20 points, but there are 6 questions. Choose 5 of these questions to be graded by crossing out one of them. You must cross out which question you would like me to disregard. Otherwise, I will choose the question whose answer is worth the greatest to not grade. Do not use any table of integral reduction formulas.

1. 
$$\int \frac{2x+4}{6x^3+x^2+2x-1} dx$$

2.  $\int \frac{x}{x+2\sqrt{x-3}} dx$

3.  $\int \frac{1}{x + 2\sqrt{x^2 - 3}} dx$

4.  $\int \frac{2\sin x}{\cos x - 4\sin x} dx$

5.  $\int \sin^2 x \cos^4 x \, dx$

6. Prove that  $\int \tan^n x \, dx = \frac{1}{n-1} \tan^{n-1} x - \int \tan^{n-2} x \, dx$  if  $n \geq 3$  as a natural number