

Name: _____

Worksheet #22

Math 221

Instructions. Put the your first and last name at the top of your paper. Everyone is to do their own worksheet but only one from each group is graded with the score shared. Be sure to **explain your reasoning**.

1. Compute $\frac{d}{ds} \int_{\cos s}^{s^2+2} \frac{1}{x^2+1} dx$.

2. A point is moving along the x -axis with acceleration $45t + 1$ at time t . If its initial velocity is 27 how far does the particle move from time $t = 1$ to time $t = 3$?

3. A patient is experiencing blood loss at a rate of $\frac{2}{1+t^2}$ pints per minute at time t (as t increases, the blood loss slows due to decreased pressure). Approximately how long before the patient loses 3 pints of blood after $t = 0$?

4. Compute the indefinite integrals using the indicated substitution.

(a) $\int 2x\sqrt{1+x^2} dx$ $u = 1 + x^2$

(c) $\int \frac{2x}{1+x^4} dx$ $u = x^2$

(b) $\int \frac{2 + \ln(x)}{x} dx$ $u = \ln x$

(d) $\int \frac{\sin(\sqrt{x})}{2\sqrt{x}} dx$ $u = \sqrt{x}$