30 POINTS (HW/QUIZ MARK). HAND IN MON NOV 29. NO LATE PAPERS ACCEPTED.

Math 220 Integration so far   **name** _____ **sec no.**_____

Please copy the problems NEATLY and do the integrations. You may use your notes and the book and any guidance you got from posted videos. *Work must be your own.* But you can find plenty of worked examples in Bittinger Secs 4.1 and 4.5, and our text, Secs 30 and 31.

1. Simple integration, initial value: consider the family of curves that are the solution to $\int\left(\sqrt{x}+2\right)dx = F(x)+C,$ where $F' = G$; find the curve that goes through $\left(1,-\frac{1}{3}\right)$.

2. *u*-substitution $\int\left(x^3 - 3x^2 + 9x\right)^4\left(x^2 - 2x + 3\right)dx$

3. *u*-substitution $\int\frac{\ln x}{x}dx = \int \ln x\cdot\left(\frac{1}{x}\right)dx$ Hint: Let $u = \ln x,$ so $du/dx =$

4. *u*-substitution $\int 4e^{9-2x}dx$

5. *u*-substitution $\int xe^{x^2}dx$

6. The marginal cost of producing the *x*th item is $5 + 2x + 1/x$. The total cost to produce one item is $500. Find the total cost function $C(x)$. Then find how much it would cost to produce 10 items. (Use your calculator, since there is a log value involved.)