2 pts. Each
No Decimals!

Name: _____KEY_____

# Homework #4
## Integration by Substitution

| | | Answers |
|---|---|---|
| 1. | $\int \frac{x^2-1}{x^3-3x+1}\,dx$ | $\frac{1}{3}ln\lvert x^3-3x+1\rvert + C$ |
| 2. | $\int x^2 e^{x^3-1}dx$ | $\frac{1}{3}e^{x^3-1}+C$ |
| 3. | $\int \frac{e^{2x}}{1+e^{2x}}\,dx$ | $\frac{1}{2}ln(1+e^{2x})+C$ |
| 4. | $\int \frac{e^{-\frac{1}{x}}}{x^2}\,dx$ | $e^{-\frac{1}{x}}+C$ |
| 5. | $\int \frac{e^x-e^{-x}}{(e^x+e^{-x})^{\frac{3}{2}}}\,dx$ | $-2(e^x+e^{-x})^{-\frac{1}{2}}+C$ |
| 6. | $\int \frac{(lnx)^3}{x}\,dx$ | $\frac{1}{4}(lnx)^4+C$ |
| 7. | $\int \frac{1}{x(lnx)^2}\,dx$ | $-\frac{1}{lnx}+C$ |
| 8. | $\int \frac{(lnx)^{\frac{7}{2}}}{x}\,dx$ | $\frac{2}{9}(lnx)^{\frac{9}{2}}+C$ |
| 9. | $\int \frac{x^4}{1-x^5}dx$ | $-\frac{1}{5}\ln\lvert 1-x^5\rvert+C$ |
| 10. | $\int \frac{e^x}{1+e^x}dx$ | $\ln(1+e^x)+C$ |
| 11. | $\int \frac{e^{3x}+x^2}{(e^{3x}+x^3)^3}dx$ | $-\frac{1}{6(e^{3x}+x^3)^2}+C$ |
| 12. | $\int \frac{1}{x\ln x}dx$ | $\ln\lvert\ln(x)\rvert+C$ |
| 13. | $\int_0^1 \frac{x}{x^2+3}dx$ (Write answer as a SINGLE logarithm) | $\frac{1}{2}\ln\left(\frac{4}{3}\right)$ |