MATH225 – Worksheet #1   Name:_____
                                                          Sec:_____
This worksheet is intended to be a review of algebra and calculus. To get full credit, you must show all of your work.

1. Find the roots of the following polynomials. (In other words, what does r equal?)
    a. $r^2 - 6r + 9 = 0$

    b. $2r^2 - r - 6 = 0$

    c. $r^2 - 2r + 5 = 0$

2. Find the derivatives of the following functions:
    a. $f(t) = 2e^{t/3}$

    b. $g(t) = 3t^2 \cos(4t)$

3. Use exponential and logarithmic rules to simplify the following, keeping your answers in terms of "e" and "ln":
    a. $e^{4t}e^t =$

    b. $\dfrac{e^{3x}}{e^{4x}} =$

    c. $\ln(20) - \ln(4) =$

    d. $\ln(20) + \ln(4) =$

    e. $e^{3\ln(x)} =$

4. Integrate the following:
    a. $\int \dfrac{\ln(x)}{x} dx$

b. $\int_0^{\pi/2} t\sin(t)\,dt$

c. $\int_0^1 8y(2y^2+1)^{1/2}\,dy$

d. $\int 5x^2 e^x\,dx$

e. $\int te^{3t}\,dt$