**Calculus II** requires *proficiency* in Calculus I and algebra & trig. Since these are review problems, **you are to work these problems alone.** This is the only assignment in which I will not help. The purpose is to help you identify types of problems that you need to review immediately.

**Show all steps**. Do not present solutions on this page. If you have difficulty working a problem, you should review that type of problem in your calculus text. Read "HOMEWORK STYLE" in the class policy before beginning this assignment.

1. Indicate each as being true or false.

   (a) $\dfrac{x + x^2}{x} = 1 + x$      (b) $\sqrt{a^2 + b^2} = a + b$      (c) $\dfrac{x}{1 - x} = x - 1$      (d) $\sqrt{x^2} = x$

2. Wherever possible, simplify the following. Show steps.

   (a) $\ln x^2 - \dfrac{1}{2}\ln x + 4\ln x$

   (b) $\dfrac{e^{-x}\,e^{3x}}{e^{7x}}$

   (c) $\ln(x^3 - 4x)$

   (d) $\dfrac{\ln x^2}{\ln x}$

   (e) $7\sin^2 x^3 - 5 + 7\cos^2 x^3$

   (f) $\ln e^{-x^3}$

3. Determine first derivatives of the following. Show steps.

   (a) $y = e^x$

   (b) $w = e^{x^4}$

   (c) $z = \sec x^2$

   (d) $h(x) = \tan(e^{-x^2})$

   (e) $f(x) = \cot 5x$

   (f) $g(x) = \ln x$

   (g) $g(x) = \ln(\sin 2x)$

   (h) $f(x) = \sqrt{x^6 - 3x^3}$

   (i) $z = x^4 + x^{2/3}$

   (j) $y = \dfrac{x^4 + 3x}{x^3 - 5}$

   (k) $w = e^{-x^4}\cos(x^2)$