The best way to review is to work these problems as if it were a test. Then you can check your answers. The relevant sections/exampes to use for review will be posted along with the answers. Review and then use these to test yourself again!

1) Using the definition of the derivative, find the derivative of the function $f(x) = 5 - x^2$

2) Find the equation of the tangent line to the graph of $y = 2x - x^3$ at the point $(2, -4)$

3) Find the derivative y' for each of the functions: simplify your answers

   a) $y = \frac{3x^2+2}{5-x}$
   b) $y = \sqrt{1 - x^2}$
   c) $y = 5^x$
   d) $y = e^\pi + \tan\sqrt{x}$

4) For the function $f(x) = e^{-x^2}$, find $f''(x)$

5) Use implicit differentiation to find $\frac{\mathrm{d}y}{\mathrm{d}x}$:

$$x^2 + 4xy + y^2 = 6$$

6) Use logarithmic differentiation to find $\frac{\mathrm{d}y}{\mathrm{d}x}$:

$$y = x^{\sin(x)}$$