Name _____

Homework 8
Section 3.4

1. (3) Compute the derivative of $f(x) = (3x^2 - 4)^3$.

2. (4ea) Find the quantities below using the table.

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
-1	5	1/2	-2	3
1	3	-4	1/3	4
3	2	1	7	6

   (a) $h'(-1)$ if $h(x) = (f(x))^2$

   (b) $k'(-1)$ if $k(x) = g\left(f\left(x^2\right)\right)$

3. (3) Find the *second* derivative of $f(x) = e^{x^2+2}$.

4. (4) Given $y = \sqrt{2x^2 + 2x + 1}$, find the exact coordinates of the point at which the tangent line to the graph is horizontal.

5. (1ea) Find the mean and variance of the normal distribution of statistics using the information in part (a) and (b) given that

$$m(t) = e^{\mu t + \sigma^2 t^2/2}.$$

(a) Mean= $m'(0)$

(b) Variance= $m''(0) - (m'(0))^2$