Calculus I   *Spring 2003*
MA113:10-12   *Russell Brown*
Week 11

- Homework G, #12, 26 in section 3.4.

- The quiz on Thursday, 3 April 2003 will cover section 3.6, curve sketching.

- The third hour exam will be in CB 114 on Tuesday, 15 April 2003.

- The error of the week: overuse of the quotient rule.

  To differentiate the function, $\frac{1}{(1-2x)^2}$, we can use the quotient rule. However, it is simpler, I think, to use the chain rule.

  By the chain rule:

$$\begin{aligned}
\frac{d}{dx}\frac{1}{(1-2x)^2} &= \frac{d}{dx}(1-2x)^{-2} \\
&= -2(1-2x)^{-3}\frac{d}{dx}(1-2x) \\
&= 4(1-2x)^{-3}.
\end{aligned}$$

  If we use the quotient rule, we have

$$\begin{aligned}
\frac{d}{dx}\frac{1}{(1-2x)^2} &= \frac{0(1-2x) - (-2)(2)(1-2x)}{(1-2x)^4} \\
&= 4\frac{(1-2x)}{(1-2x)^4} \\
&= \frac{4}{(1-2x)^3}
\end{aligned}$$

  which will simplify to give the same result.

March 31, 2003