The product and quotient rules should confirm things we already know about power functions. Consider the function $a(x) = x^5$

1. Using the power rule, what is the derivative $a'(x)$?

2. Rewrite $a(x) = b(x)c(x)$, where $b(x) = x^3$ and $c(x) = x^2$. What happens when you apply the product rule to $b(x)c(x)$ to calculate $a'(x)$?

3. Rewrite $a(x) = \frac{d(x)}{f(x)}$, where $d(x) = x^8$ and $f(x) = x^3$. What happens when you apply the quotient rule to $\frac{d(x)}{f(x)}$ to calculate $a'(x)$?

   Now, consider the function $g(x) = \frac{1}{x^7}$.

4. Using the power rule, what is the derivative?

5. Rewrite $g(x) = \frac{h(x)}{j(x)}$, where $h(x) = 1$ and $j(x) = x^7$. What happens when you apply the quotient rule to $\frac{h(x)}{j(x)}$ to calculate $g'(x)$?

6. Rewrite $g(x) = \frac{k(x)}{l(x)}$, where $k(x) = x^2$ and $l(x) = x^9$. What happens where you apply the quotient rule to $\frac{k(x)}{l(x)}$ to calculate $g'(x)$?