Exponents: Product Rule Practice   Name:_____

                                                                              Period:_____

For the following questions, please **show work** as to how you came up with your answers.

Simplify.

1. $4^3 \bullet 4^{-5} \bullet 4^4 \bullet 4^{-1}$

2. $m^6 \bullet m^{-2} \bullet m^1 \bullet m^{-7}$

3. $7^{-7} \bullet 7^{-2} \bullet 7^4 \bullet 7^2 \bullet 7$

4. $p^{-9} \bullet p^4 \bullet p^6 \bullet p^{-3} \bullet p^7 \bullet p^{-1}$

5.   Complete the table and look for patterns.

Exponential Form	Expanded Form	Solution
$(-1)^1$	(-1)	-1
$(-1)^2$	$(-1)(-1)$	1
$(-1)^3$	$(-1)(-1)(-1)$	-1
$(-1)^4$		
$(-1)^5$		
$(-1)^6$		
$(-1)^7$		
$(-1)^8$		

6.   What did you notice about the pattern in the solution column?

7.   How can you determine whether the answer is positive or negative from looking at the number in exponential form?