Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Pre Calculus 11 Chapter 5: Negative and Rational Exponents**

1. Simplify each of the following expressions:

|  |  |  |  |
| --- | --- | --- | --- |
| \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ |
| \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ |
| \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ |

1. Express the following as a single power (Simplify or reduce the base if possible)

|  |  |  |  |
| --- | --- | --- | --- |
| \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ |
| \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ |
| \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ |
| \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_ |

1. Simplify each of the following:

|  |  |  |  |
| --- | --- | --- | --- |
| a) | b) | c) | d) |
| e) | f) | g) | h) |
| i) | j) | k) | L) |
| m)   | n)   | o)  | p)  |
| q)  | r)  | s)  | t)  |

1. Simplify each of the following:

|  |  |  |  |
| --- | --- | --- | --- |
| a) | b)  | c)  | d) |
| e)  | f)  | g)  | h) |
| i) | j) | k) | L)  |
| m)  | n) | o)  | P)  |
| q) | r) | s) | t)  |

1. The amount of garbage Canadians accumulate (in pounds per household), p, can be modeled by the equation  , where “x” represents the number of years since 2000. In what year would Canadians accumulate approximately 340 pounds of garbage per household?
2. The amount of red meat Americans consume each year, “y”, can be modeled by the equation  , where “x” represents the number of years since 1998. In what year would Americans consume approximately 46 pounds of red meat?