Name: _____   Date: _____

Homework: Imaginary Numbers

Completely simplify the following radicals.

1) $\sqrt{-810}$ 2) $12\sqrt{-1942}$ 3) $-3\sqrt{-45x^3y^2}$

Completely simplify the following powers of i.

4) i^{101} 5) i^{70} 6) i^{3004} 7) $i^{1,978,103}$

Completely simplify the following expressions.

8) $(3i^{30})(-3i^{11})$ 9) $5i^{16} - 5i^{27} + 13i^{80}$ 10) $2i^{20} - 2i^{21} - 2i^{22} + 2i^{24}$

11) $(i^{203})^{557}$ 12) $(2i - i^3)(3i^2 + i^{10})$ 13) $(2i - i)^{102,549}$

14) Simplify $(i^{17} - i^5)^3$

15) Determine whether the following statement is true or false. Explain your reasoning.

Given the imaginary number $-3i$, -3 is the constant and i is the variable.

16) Simplify i^{4k+3} where k is a positive integer.

Explain how you arrived at your answer.

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