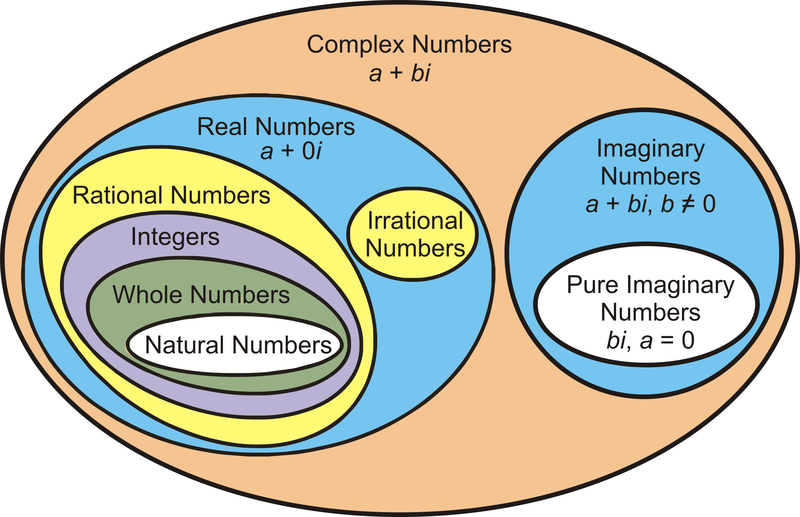
Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Introduction to imaginary numbers



|  |
| --- |
| **i2 = -1** |

A complex number is of the form a + bi, where a is the real number and bi is the imaginary number.

Simplify negative square roots:

* Rewrite as
* Break down the perfect square if necessary, and simplify

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  | 1. -4 |

Add or subtract. Write your final answer in the form a + bi.

|  |  |  |
| --- | --- | --- |
| 1. (4 + 7i) + (2 – 3i) | 1. (5 – 2i) – (7 – 6i) | 1. (3 + i) + (-4 – 2i) |
| 1. (9 + ) + (-2 + | | 1. (8 - - (2 + ) | 1. (2 + + (5 - ) |

|  |  |
| --- | --- |
| i1 | i5 |
| i2 | i6 |
| i3 | i7 |
| i4 | i8 |

How can we compute higher powers of I without extending the table?

|  |  |  |  |
| --- | --- | --- | --- |
| 1. I20 | 1. I37 | 1. I203 | 1. I62 |

Use properties of exponents and the above table to multiply

|  |  |  |
| --- | --- | --- |
| 1. 5i(9i) | 1. -8i(4i) | 1. 3i(2i)(5i) |
| 1. (3 + 2i)(5 + 3i) | 1. (3 – i)(3 + i) | 1. (2 – 5i)(5 – 2i) |

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|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  | 1. -2 |
| 1. (1 + 5i) + (1 – 5i) | 1. (3 + 2i) – (3 + 2i) | 1. (2 + 6i) – (7 + 9i) | 1. (3 + 3i) – (8 – 3i) |
| 1. (5 + 4i) – (-1 – 2i) | 1. (6 – 8i) + (4 – 5i) | 1. (3 + i) + (3 + i) | 1. (-1 – 7i) + (-4 – 3i) |
| (2 + ) + (-3 + ) | (4 + ) – (-5 - ) | (4 + ) + (6 - | (8 + ) – (3 + ) |
| (3 + ) + (12 + ) | (2 + ) – (4 - ) | (2 + ) + (3 + ) | (-1 + ) + (-1 - |
| 1. i29 | 1. i47 | 1. i78 | 1. i44 |
| 1. (3i)(3i) | 1. (4i)2 | 1. (-3i)(8i) | 1. (2i)(4i)(6i) |
| 1. 4(5i) | 1. 4i(5i) | 1. (3i2)(4i2) | 1. -5i(5i) |
| 1. (3 + 6i)(3 – 6i) | 1. (3 + i)(9 – 3i) | 1. (2 + 3i)(4 + 7i) | 1. (2 – 5i)(3 – 6i) |