Simplifying Complex Numbers

Complex Numbers are binomials (expressions with two terms) that look like: . They add and subtract just like any other variable expression—by combining like terms. But, remember: unlike *x*, the *i* term goes at the back.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **EXAMPLE***Re-organized:* | 1.  | 2. | 3.  | 4.  |
| **EXAMPLE***Re-organized:* | 5. | 6. | 7. | 8. |

To multiply complex numbers, you have two choices (just like with any variable expressions): you can FOIL or use the box method. I prefer the box method, because it keeps me organized. Either way, you multiply it just like you normally would. However, there are two things you cannot forget: if you can simplify, you must simplify; and .

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **EXAMPLE**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

 | 9. | 10.  | 11.  |
| **EXAMPLE**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

 | 12. | 13.  | 14. |
| **EXAMPLE**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |

 | 15.  | 16.  | 17.  |

To simplify a fraction with a complex number in the numerator (the top), simply reduce each term, as always.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **EXAMPLE**EVERY term can be reduced by 3, so… | 18.  | 19. | 20. | 21. |