Lesson 1 - Suggested Problems

Trevor Bramwell

January 13, 2013

Solutions

1. $(3-2i)+(-7+5i) = (3-7)+(-2+5)i$
   $= -4+3i$

2. $(3-2i)-(-7+5i) = (3-(-7))-(-2-5)i$
   $= 10-7i$

3. $(3-2i)(-7+5i) = (3)(-7)+(3)(5)i+(-2)(-7)i+(-2)(5)i^2$
   $= -21+15i+14i-10i^2$
   $= -10i^2+29i-21$

4. $$\frac{1}{1-i} = \frac{1}{1-i}\left(\frac{1+i}{1+i}\right) = \frac{1+i}{1-i^2} = \frac{1+i}{2} = \frac{1}{2}+\frac{1}{2}(i)$$

5. $$\frac{3-2i}{-7+5i}$$

6. $\overline{5-12i}$

7. $|5-12i|$

8. $|5+12i|$

9. i^{100}

10. i^{49}

Find all real or complex solutions:

11. $4x^2 + 9 = 0$

12. $x^2 + z = -2$

    Illustrate on a graph the parallelogram or triangle law for the expressions:

13. $(2 + i) + (3 - 4i)$

14. $(2 + 2i) - (-3 + i)$

15. Let $z = 2 + i$ and $w = 3 - 4i$. Use a graph to illustrate $z, w, |z - w|$.