



(29)  $(2+4i) + (4-i)$   
 $6 + 3i$

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(5)  $\sqrt{-50}$       (7)  $\sqrt{-32}$   
 $\sqrt{25 \cdot 2}$        $\sqrt{16 \cdot 2}$   
 $5i\sqrt{2}$        $4i\sqrt{2}$

(17)  $-\sqrt{50} + 2$   
 $\begin{matrix} \textcircled{5} & 10 \\ & \textcircled{2} \end{matrix}$   
 $-2 - 5i\sqrt{2}$

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31. $7 + 4i$	32. $-2 - 3i$	33. $10 + 6i$
34. $-7 - 10i$	35. $10$	36. $26 - 7i$
37. $9 + 58i$	38. $9 - 23i$	39. $-36$
40. $65 + 72i$	41. $\pm 5i$	42. $\pm \frac{i\sqrt{2}}{2}$

35)  $(-2i)(5i)$       (39)  $(-6i)^2$   
 $-10i^2$        $(-6)^2 i^2$   
 $-10(-1) = 10$        $36 \cdot -1$   
 $-36$

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$$\text{Ex } (8+2i)(2+7i)$$

$$16 + 56i + 4i + 14i^2$$

$$16 + 60i + 14(-1)$$

$$2 + 60i$$

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### 5.6 Complex Numbers Part 2 – Solving Equations

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**Solve each equation by taking the square root.**

$$1) x^2 + 49 = 0$$

$$\sqrt{x^2} = \sqrt{-49}$$

$$x = \pm 7i$$

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**Solve.**

4)  $(x + 4i)(x - 4i) = 97$

$$x^2 - \cancel{4xi} + \cancel{4xi} - 16i^2 = 97$$

$$x^2 - 16(-1) = 97$$

Now simplify to solve!

$$x^2 + 16 = 97$$

$$\sqrt{x^2} = \sqrt{81}$$

$$x = \pm 9$$

Remember,  
 $i^2 = -1$

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Two complex numbers  $a + bi$  and  $c + di$  are equal when  $a = c$  and  $b = d$ . Solve the equation for  $x$  and  $y$ .

5)  $3x + 20i = 15 - 6yi$

$$3x = 15$$

$$x = 5$$

$$20 = -6y$$

$$-\frac{20}{6} = y$$

$$-\frac{10}{3} = y$$

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**Simplify each expression. Be sure to write final answer in the form  $a + bi$**

6)  $(6 - \sqrt{-4})(2 + \sqrt{-1})$       7)  $3i(5 - 7i)$

$$(6 - 2i)(2 + i)$$

$$12 + 6i - 4i - 2i^2$$

$$12 + 2i - 2(-1)$$

$$14 + 2i$$

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Try these!

1) Solve:  $-5x^2 - 30 = 0$

2) Simplify:  $(-2i)(5i)(3i)$

3) Solve  $8x^2 = -2$

4)  $(1 - \sqrt{-4})(-3 - \sqrt{-25})$

5)  $4(3i - 6) - 4i$

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**HOMEWORK ASSIGNMENT**

**5.6 Part 2**

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**(41, 44, 45, 50-52, 56, 57-65 odd and 68-70)**

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Solve each equation. Check your answers.

41.  $x^2 + 25 = 0$

42.  $2x^2 + 1 = 0$

43.  $3x^2 + 2 = -62$

44.  $x^2 = -7$

45.  $x^2 + 36 = 0$

46.  $-5x^2 - 3 = 0$

Find the first three output values of each fractal-generating function. Use  $z = 0$  as the first input value.

47.  $z^2 - i$

48.  $f(z) = z^2 - 2i$

49.  $f(z) = z^2 + 1 - i$

Solve each equation.

50.  $x^2 + 16 = -49$

51.  $x^2 - 30 = -79$

52.  $3x^2 + 1 = x^2 - 1$

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