

Assignment C.L.3, Pages 111, 112, #s 9, 79 add

$$\begin{aligned} 9. \quad & (2-3i) + (6+8i) \\ & (2+6) + (-3i+8i) \\ & 8+5i \end{aligned}$$

$$\begin{aligned} 11. \quad & (-3+2i) - (4-4i) \\ & [(-3)+(-4)] + (2i+4i) \\ & -7+6i \end{aligned}$$

$$\begin{aligned} 13. \quad & (2-5i) - (8+6i) \\ & [2+(-8)] + [(-5i)+(-6i)] \\ & -6+(-11i) \end{aligned}$$

$$\begin{aligned} 15. \quad & 3(2-6i) \\ & [(3)(2)] + [(3)(-6i)] \\ & 6+(-18i) \end{aligned}$$

$$\begin{aligned} 17. \quad & 2i(2-3i) \\ & [(2i)(2)] + [(2i)(-3i)] \\ & 4i + 6i^2 \qquad 4i + (-6i) \\ & 4i + (-6i) \end{aligned}$$

$$19. (3-4i)(2+i)$$

$$\begin{array}{r} 3-4i \\ 2+i \\ \hline \end{array}$$

$$6+8i$$

$$6+8i$$

$$6+8i$$

$$6+8i+4i^2$$

$$6+(6)+24i$$

$$2+24i = 2(2+12i)$$

$$21. (-6+i)(-6-i)$$

$$\begin{array}{r} -6+i \\ -6-i \\ \hline \end{array}$$

$$36+6i$$

$$36-6i$$

$$36-6i$$

$$36+(-6) = 30$$

$$23. \frac{10(3+4i)}{3-4i} = \frac{(10)(3) + (10)(4i)}{(3)(3) + (3)(4i) + (-4i)(3) + (-4i)(4i)}$$

$$30 + 40i$$

$$9 + 12i + (-12i) + (-16i^2) = (-1)$$

$$9 + 16 = 25$$

$$\frac{30+40i}{25}$$

$$25. \frac{2+i}{i} \cdot \frac{i}{i} = \frac{(2)(i) + (i)(i)}{(i)(i)} = \frac{2i + i^2}{i^2}$$

$$\frac{2i + (-1)}{-1}$$

$$27. \frac{6+i}{1+i} \cdot \frac{1-i}{1-i} = \frac{(6)(1) + (6)(-i) + (-i)(1) + (-i)(-i)}{(1)(1) + (1)(-i) + (i)(1) + (i)(-i)}$$

$$\frac{6 + (-6i) + (-i) + (i^2)}{1 + (-i) + i + (-i^2)} = \frac{5 + (-7i)}{2}$$

$$2 + (-2) = 0$$

$$29. \left( \frac{1}{2} + \frac{\sqrt{3}}{2}i \right)^2 = \frac{1 + 91i}{4 \quad 4i} \cdot \frac{4 - 4i}{4 - 4i}$$

$$(1)(4) + (1)(-4i) + (91i)(4) + (91i)(-4i)$$

$$(4)(4) + (4)(-4i) + (4)(4) + (4i)(-4i)$$

$$4 + (-4i) + 324i + 324i^2 (-1) = -320 + 320i$$

$$16 + (-16i) + 16i + (-16i^2)(-1) = 16 + 16 = 32$$

$$\frac{-(-1) + \sqrt{16 - 52}}{2} = \frac{-320 + 320i}{32}$$

$$34. i^{14} = i^4 \cdot i^4 \cdot i^4 \cdot i^2 = -1$$

$$47. \sqrt{-4} = \sqrt{4i} = 2i$$

$$49. \sqrt{-25} = \sqrt{25i} = 5i$$

$$\sqrt{-9} = \sqrt{9i} = 3i$$

$$59) x^2 - 6x + 10 = 0$$

$$53. x^2 + 4 = 0$$

$$(x+2i)(x-2i) = 0$$

$$x = \pm 2i$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$55. x^2 - 16 = 0$$

$$(x+4)(x-4) = 0$$

$$x = -6, 6$$

$$x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(1)(16)}}{2(1)}$$

$$57. x^2 - 6x + 13 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-6) \pm \sqrt{36 - 40}}{2}$$

$$x = \frac{-(-6) \pm \sqrt{-76}}{2} = -3 \pm i\sqrt{19}$$

$$x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(1)(13)}}{2(1)}$$

$$x = -(-6) \pm$$

$$x = \frac{-(-6) \pm \sqrt{36 - 52}}{2}$$

$$x = \frac{-(-6) \pm \sqrt{-16}}{2}$$

$$x = \frac{-(-6) \pm \sqrt{8i}}{2}$$