

Algebra 2 3.2 Complex Numbers
Pg. 108 [5-9, 21-27, 37-41, 49-53]

$$\begin{aligned} \boxed{5} \quad & \frac{\sqrt{-36}}{\sqrt{36} \cdot \sqrt{-1}} \\ & \underline{6i} \end{aligned}$$

$$\begin{aligned} \boxed{6} \quad & \frac{\sqrt{-64}}{\sqrt{64} \cdot \sqrt{-1}} \\ & \underline{8i} \end{aligned}$$

$$\begin{aligned} \boxed{7} \quad & \frac{\sqrt{-18}}{\sqrt{18} \cdot \sqrt{-1}} \\ & \frac{9 \cdot \sqrt{2} \cdot \sqrt{-1}}{\sqrt{18} \cdot \sqrt{-1}} \\ & \underline{3\sqrt{2}i} \end{aligned}$$

$$\begin{aligned} \boxed{8} \quad & \frac{\sqrt{-24}}{\sqrt{24} \cdot \sqrt{-1}} \\ & \frac{\sqrt{4} \cdot \sqrt{6} \cdot \sqrt{-1}}{\sqrt{24} \cdot \sqrt{-1}} \\ & \underline{2\sqrt{6}i} \end{aligned}$$

$$\begin{aligned} \boxed{9} \quad & \frac{2\sqrt{-16}}{2\sqrt{16} \cdot \sqrt{-1}} \\ & 2 \cdot 4 \cdot i = \underline{8i} \end{aligned}$$

$$\begin{aligned} \boxed{21} \quad & (6-i) + (7+3i) \\ & \underline{13+2i} \end{aligned}$$

$$\begin{aligned} \boxed{22} \quad & (9+5i) + (11+2i) \\ & \underline{20+7i} \end{aligned}$$

$$\begin{aligned} \boxed{23} \quad & (12+4i) - (3-7i) \\ & 12+4i-3+7i \\ & \underline{9+11i} \end{aligned}$$

$$\begin{aligned} \boxed{24} \quad & (2-15i) - (4+5i) \\ & 2-15i-4-5i \\ & \underline{-2-20i} \end{aligned}$$

$$\begin{aligned} \boxed{25} \quad & (12-3i) + (7+3i) \\ & 19+0i \\ & \underline{19} \end{aligned}$$

$$\begin{aligned} \boxed{26} \quad & (16-9i) - (2-9i) \\ & 16-9i-2+9i \\ & 14+0i \\ & \underline{14} \end{aligned}$$

$$\begin{aligned} \boxed{27} \quad & 7 - (3+4i) + 6i \\ & 7-3-4i+6i \\ & \underline{4+2i} \end{aligned}$$

$$\begin{aligned} \boxed{37} \quad & 3i(-5+i) \\ & -15i + 3i^2 \\ & -15i + 3(-1) \\ & \underline{-3-15i} \end{aligned}$$

$$\boxed{38} \quad 2i(7-i)$$

$$14i - 2i^2$$

$$14i - 2(-1)$$

$$\underline{2 + 14i}$$

$$\boxed{39} \quad (3-2i)(4+i)$$

$$12 + 3i - 8i - 2i^2$$

$$12 - 5i - 2(-1)$$

$$12 - 5i + 2$$

$$\underline{14 - 5i}$$

$$\boxed{40} \quad (7+5i)(8-6i)$$

$$56 - 42i + 40i - 30i^2$$

$$56 - 2i - 30(-1)$$

$$56 - 2i + 30$$

$$\underline{86 - 2i}$$

$$\boxed{41} \quad (4-2i)(4+2i)$$

$$16 + 8i - 8i - 4i^2$$

$$16 - 4(-1)$$

$$16 + 4$$

$$\boxed{20}$$

$$\boxed{49} \quad \text{Solve your equation}$$

$$x^2 + 9 = 0$$

$$\sqrt{x^2} = \sqrt{-9}$$

$$x = \pm \sqrt{-9}$$

$$x = \pm \sqrt{9}i$$

$$\boxed{x = \pm 3i}$$

$$\boxed{50} \quad x^2 + 49 = 0$$

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

$$x = \pm \sqrt{-49}$$

$$x = \pm \sqrt{49}i$$

$$\boxed{x = \pm 7i}$$

$$\boxed{51} \quad x^2 - 4 = -11$$

$$\sqrt{x^2} = \sqrt{-7}$$

$$x = \pm \sqrt{-7}$$

$$\boxed{x = \pm \sqrt{7}i}$$

$$\boxed{52} \quad x^2 - 9 = -15$$

$$\sqrt{x^2} = \sqrt{-6}$$

$$x = \pm \sqrt{-6}$$

$$\boxed{x = \pm \sqrt{6}i}$$

$$\boxed{53} \quad 2x^2 + 6 = -34$$

$$\frac{2x^2}{2} = \frac{-40}{2}$$

$$\sqrt{x^2} = \sqrt{-20}$$

$$x = \pm \sqrt{-20}$$

$$x = \pm \sqrt{20}i$$

$$\sqrt{4 \cdot 5}$$

$$\boxed{x = \pm 2\sqrt{5}i}$$