

Algebra 2
Homework Answers

Pg. 273-274 #4-11, 48-51

$$\begin{aligned}\checkmark 4. \sqrt{-36} &= \sqrt{-1 \cdot 6^2} \\ &= \sqrt{-1} \cdot \sqrt{6^2} \\ &= i \cdot 6 \\ &= 6i\end{aligned}$$

$$\begin{aligned}\checkmark 5. \sqrt{-50x^2y^2} &= \sqrt{-1 \cdot 5^2 \cdot 2 \cdot x^2 \cdot y^2} \\ &= \sqrt{-1} \cdot \sqrt{5^2} \cdot \sqrt{2} \cdot \sqrt{x^2} \cdot \sqrt{y^2} \\ &= i \cdot 5 \cdot |x| \cdot |y| \cdot \sqrt{2} \\ &= 5i|xy|\sqrt{2}\end{aligned}$$

$$\begin{aligned}\checkmark 6. (6i)(-2i) &= -12(i)^2 \\ &= -12(-1) \\ &= 12\end{aligned}$$

$$\begin{aligned}\checkmark 7. 5\sqrt{-24} \cdot 3\sqrt{-18} &= 5i\sqrt{24} \cdot 3i\sqrt{18} \\ &= 15(i)^2\sqrt{24 \cdot 18} \\ &= 15(-1)(12)\sqrt{3} \\ &= -180\sqrt{3}\end{aligned}$$

$$\begin{aligned}\checkmark 8. i^{29} &= i^{28} \cdot i \\ &= (i^2)^{14} \cdot i \\ &= (-1)^{14} \cdot i \\ &= 1 \cdot i \\ &= i\end{aligned}$$

$\longrightarrow \equiv \div 4$

$$R1 \rightarrow i^1 = i$$

$$R2 \rightarrow i^2 = -1$$

$$R3 \rightarrow i^3 = -i$$

$$R0 = R4 \rightarrow i^4 = +1$$

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

$$\begin{aligned}\checkmark 10. (3 - 5i)(4 + 6i) &= 12 + 18i - 20i - 30i^2 \\ &= 12 - 2i - 30(-1) \\ &= 12 - 2i + 30 \\ &= 42 - 2i\end{aligned}$$

$$\begin{aligned}\checkmark 11. \frac{3+i}{1+4i} &= \frac{3+i}{1+4i} \cdot \frac{1-4i}{1-4i} \\ &= \frac{3-12i+i-4(i)^2}{1^2-(4i)^2} \\ &= \frac{3-11i-4(-1)}{1-16(-1)} \\ &= \frac{3-11i+4}{1+16} \\ &= \frac{7-11i}{17} \\ &= \frac{7}{17} - \frac{11}{17}i\end{aligned}$$

$$\textcircled{8} \quad 4 \overline{) 29} \quad R1 \rightarrow \boxed{i} \quad \checkmark$$



$$48. 5x^2 + 5 = 0$$

$$5x^2 = -5$$

$$x^2 = -1$$

$$x = \pm\sqrt{-1}$$

$$x = \pm i$$



49. $4x^2 + 64 = 0$

$$4x^2 = -64$$

$$x^2 = -16$$

$$x = \pm\sqrt{-16}$$

$$x = \pm 4i$$



50. $2x^2 + 12 = 0$

$$2x^2 = -12$$

$$x^2 = -6$$

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

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



51. $6x^2 + 72 = 0$

$$6x^2 = -72$$

$$x^2 = -12$$

$$x = \pm\sqrt{-12}$$

$$x = \pm 2i\sqrt{3}$$