Algebra 2
Homework Answers

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

**4.** $\sqrt{-36} = \sqrt{-1 \cdot 6^2}$
$= \sqrt{-1} \cdot \sqrt{6^2}$
$= \boldsymbol{i} \cdot 6$
$= 6\boldsymbol{i}$

**5.** $\sqrt{-50x^2y^2} = \sqrt{-1 \cdot 5^2 \cdot 2 \cdot x^2 \cdot y^2}$
$= \sqrt{-1} \cdot \sqrt{5^2} \cdot \sqrt{2} \cdot \sqrt{x^2} \cdot \sqrt{y^2}$
$= \boldsymbol{i} \cdot 5 \cdot |x| \cdot |y| \cdot \sqrt{2}$
$= 5\boldsymbol{i}\,|xy|\sqrt{2}$

**6.** $(6\boldsymbol{i})(-2\boldsymbol{i}) = -12(\boldsymbol{i})^2$
$= -12(-1)$
$= 12$

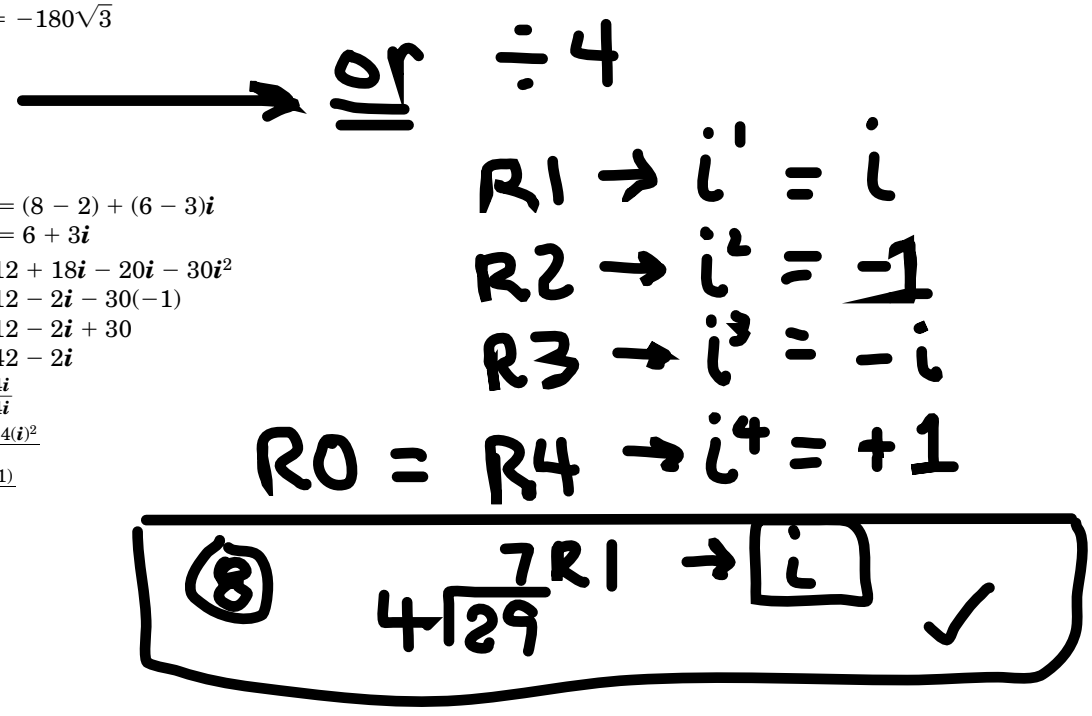
**7.** $5\sqrt{-24} \cdot 3\sqrt{-18} = 5\boldsymbol{i}\sqrt{24} \cdot 3\boldsymbol{i}\sqrt{18}$
$= 15(\boldsymbol{i})^2\sqrt{24 \cdot 18}$
$= 15(-1)(12)\sqrt{3}$
$= -180\sqrt{3}$

**8.** $\boldsymbol{i}^{29} = \boldsymbol{i}^{28} \cdot \boldsymbol{i}$
$= (\boldsymbol{i}^2)^{14} \cdot \boldsymbol{i}$
$= (-1)^{14} \cdot \boldsymbol{i}$
$= 1 \cdot \boldsymbol{i}$
$= \boldsymbol{i}$

**9.** $(8 + 6\boldsymbol{i}) - (2 + 3\boldsymbol{i}) = (8 - 2) + (6 - 3)\boldsymbol{i}$
$= 6 + 3\boldsymbol{i}$

**10.** $(3 - 5\boldsymbol{i})(4 + 6\boldsymbol{i}) = 12 + 18\boldsymbol{i} - 20\boldsymbol{i} - 30\boldsymbol{i}^2$
$= 12 - 2\boldsymbol{i} - 30(-1)$
$= 12 - 2\boldsymbol{i} + 30$
$= 42 - 2\boldsymbol{i}$

**11.** $\frac{3 + \boldsymbol{i}}{1 + 4\boldsymbol{i}} = \frac{3 + \boldsymbol{i}}{1 + 4\boldsymbol{i}} \cdot \frac{1 - 4\boldsymbol{i}}{1 - 4\boldsymbol{i}}$
$= \frac{3 - 12\boldsymbol{i} + \boldsymbol{i} - 4(\boldsymbol{i})^2}{1^2 - (4\boldsymbol{i})^2}$
$= \frac{3 - 11\boldsymbol{i} - 4(-1)}{1 - 16(-1)}$
$= \frac{3 - 11\boldsymbol{i} + 4}{1 + 16}$
$= \frac{7 - 11\boldsymbol{i}}{17}$
$= \frac{7}{17} - \frac{11}{17}\boldsymbol{i}$



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

$5x^2 = -5$

$x^2 = -1$

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

$x = \pm \boldsymbol{i}$

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

$$4x^2 = -64$$
$$x^2 = -16$$
$$x = \pm\sqrt{-16}$$
$$x = \pm 4\boldsymbol{i}$$

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

$$2x^2 = -12$$
$$x^2 = -6$$
$$x = \pm\sqrt{-6}$$
$$x = \pm\boldsymbol{i}\sqrt{6}$$

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

$$6x^2 = -72$$
$$x^2 = -12$$
$$x = \pm\sqrt{-4.3}$$
$$x = \pm 2\boldsymbol{i}\sqrt{3}$$