Complex Numbers Practice

Name: _____ Date: _____

Question 1

Convert to i form

I. $\sqrt{-9}$

II. $\sqrt{-7}$

III. $-\sqrt{-81}$

IV. $4-\sqrt{-60}$

Question 2

Convert to i form

I. $-\sqrt{-72}-\sqrt{-25}$

II. $-\sqrt{-72}+\sqrt{-25}$

III. $\sqrt{-4}+\sqrt{-12}$

IV. $\sqrt{-4}-\sqrt{-12}$

Question 3

Solve

I. $(3+4i)+(2-7i)$

II. $(3+4i)-(2-7i)$

III. $(3-4i)-(2-7i)$

IV. $(3+4i)+(2+7i)$

Complex Numbers Practice

Question 4

Solve

I. $5i \cdot 9i$

II. $\sqrt{-49} \quad \sqrt{-16}$

III. $-7i(3+4i)$

IV. $(7-2i)(2-6i)$

V. $(7-2i)^2$

Question 5

Solve

I. $\dfrac{26}{5+i}$

II. $\dfrac{3i}{4+2i}$

III. $\dfrac{4}{7i}$

IV. $\dfrac{4+2i}{3i}$

Question 6

Convert

I. i

II. i^2

III. i^3

IV. i^4

V. i^5

VI. i^6

VII. i^7

VIII. i^8

Complex Numbers Practice

Name: **Key** Date: _____

Question 1

Convert to i form

I. $\sqrt{-9} \rightarrow \sqrt{9 \cdot -1} \rightarrow \sqrt{9}\ \sqrt{-1} \rightarrow 3i$

II. $\sqrt{-7} \rightarrow \sqrt{7 \cdot -1} \rightarrow \sqrt{7}\ \sqrt{-1} \rightarrow i\sqrt{7}$

III. $-\sqrt{-81} \rightarrow -1 \cdot \sqrt{81 \cdot -1} \rightarrow -1 \cdot \sqrt{81}\ \sqrt{-1} \rightarrow -1 \cdot 9 \cdot i \rightarrow -9i$

IV. $4 - \sqrt{-60} \rightarrow 4 - \sqrt{60 \cdot -1} \rightarrow 4 - \sqrt{60}\ \sqrt{-1} \rightarrow 4 - i \cdot 2\sqrt{15} \rightarrow 4 - 2i\sqrt{15}$

Question 2

Convert to i form

I. $-\sqrt{-72} - \sqrt{-25} \rightarrow -6i\sqrt{2} - 5i \rightarrow -i\left(6\sqrt{2} + 5\right)$

II. $-\sqrt{-72} + \sqrt{-25} \rightarrow -6i\sqrt{2} + 5i \rightarrow i\left(-6\sqrt{2} + 5\right)$

III. $\sqrt{-4} + \sqrt{-12} \rightarrow 2i + 2i\sqrt{3} \rightarrow 2i\left(1 + 1\sqrt{3}\right)$

IV. $\sqrt{-4} - \sqrt{-12} \rightarrow 2i - 2i\sqrt{3} \rightarrow 2i\left(1 - 1\sqrt{3}\right)$

Question 3

Solve

I. $(3+4i)+(2-7i) \rightarrow (3+4i)+(2+-7i) \rightarrow (3+2)+(4i+-7i) \rightarrow 5-3i$

II. $(3+4i)-(2-7i) \rightarrow (3+4i)+(-2+7i) \rightarrow (3+-2)+(4i+7i) \rightarrow 1+11i$

III. $(3-4i)-(2-7i) \rightarrow (3+-4i)+(-2+7i) \rightarrow (3+-2)+(-4i+7i) \rightarrow 1+3i$

IV. $(3+4i)+(2+7i) \rightarrow (3+2)+(4i+7i) \rightarrow 5+11i$

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Question 4

Solve

I. $5i \cdot 9i \rightarrow 45 \cdot i^2 \rightarrow 45 \cdot -1 \rightarrow -45$

II. $\sqrt{-49}\ \sqrt{-16} \rightarrow 7i \cdot 4i \rightarrow 28i^2 \rightarrow 28 \cdot -1 \rightarrow -28$

III. $-7i(3+4i) \rightarrow -21i - 28i^2 \rightarrow -21i + 28$

IV. $(7-2i)(2-6i) \rightarrow 14 - 42i - 4i + 12i^2 \rightarrow 14 - 42i - 4i - 12 \rightarrow 2 - 46i$

V. $(7-2i)^2 \rightarrow (7-2i)(7-2i) \rightarrow 49 - 14i - 14i + 4i^2 \rightarrow 49 - 14i - 14i - 4 \rightarrow 45 - 28i$

Question 5

Solve

I. $\frac{26}{5+i} \rightarrow \frac{26}{5+i} \cdot \frac{5-i}{5-i} \rightarrow \frac{26(5-i)}{26} \rightarrow 5 - i$

II. $\frac{3i}{4+2i} \rightarrow \frac{3i}{4+2i} \cdot \frac{4-2i}{4-2i} \rightarrow \frac{6+12i}{20} \rightarrow \frac{3}{10} + \frac{3i}{5}$

III. $\frac{4}{7i} \rightarrow \frac{4}{7i} \cdot \frac{i}{i} \rightarrow \frac{4i}{7i^2} \rightarrow \frac{4i}{-7} \rightarrow \frac{-4i}{7}$

IV. $\frac{4+2i}{3i} \rightarrow \frac{4+2i}{3i} \cdot \frac{i}{i} \rightarrow \frac{4i+2i^2}{3i^2} \rightarrow \frac{4i-2}{-3} \rightarrow \frac{4i}{-3} + \frac{2}{3} \rightarrow \frac{2}{3} - \frac{4i}{3}$

Question 6

Convert

I. $i \rightarrow \sqrt{-1}$

II. $i^2 \rightarrow -1$

III. $i^3 \rightarrow -\sqrt{-1}$

IV. $i^4 \rightarrow 1$

V. $i^5 \rightarrow \sqrt{-1}$

VI. $i^6 \rightarrow -1$

VII. $i^7 \rightarrow -\sqrt{-1}$

VIII. $i^8 \rightarrow 1$