Additional Problems: Complex Numbers

**The Existence of Imaginary Numbers**

**Some problems include the solution. Please remove before sharing with students.**

1. What are the types of solutions for x in the equation $x^{2}-6=0$?

imaginary

rational

irrational

real

Solution: irrational

1. What are the types of solutions for x in the equation $x^{2}+9=0$?

imaginary

rational

irrational

real

Solution: imaginary

1. What are the types of solutions for x in the equation $x^{2}-5=0$?

imaginary

rational

irrational

real

Solution: irrational

1. What type of number is $7-2i$?

real

complex

imaginary

irrational

Solution: complex

1. 5. What type of number is $5i$?

real

complex

imaginary

irrational

Solution: imaginary

1. What type of number is $\sqrt{2}$?

real

complex

imaginary

irrational

Solution: irrational

1. Which of the following re-expresses the negative square root $\sqrt{-18}$ as a complex number in the standard form $a+bi$?

$$3\sqrt{2}$$

$$3i\sqrt{2}$$

$$6i\sqrt{2}$$

$$6\sqrt{2i}$$

Solution:$3i\sqrt{2}$

1. Which of the following re-expresses the negative square root $\sqrt{-50}$ as a complex number in the standard form $a+bi$?

$$5\sqrt{2}$$

$$5i\sqrt{2}$$

$$10i\sqrt{2}$$

$$10\sqrt{2i}$$

Solution:$5i\sqrt{2}$

1. Which of the following re-expresses the negative square root $\sqrt{-72}$ as a complex number in the standard form $a+bi$?

$$6\sqrt{2}$$

$$6i\sqrt{2}$$

$$12i\sqrt{2}$$

$$12\sqrt{2i}$$

Solution:$6i\sqrt{2}$

1. Which of the following re-expresses the negative square root $-4\sqrt{-45}$ as a complex number in the standard form $a+bi$?

$$6i\sqrt{5}$$

$$-12i\sqrt{5}$$

$$-12\sqrt{5}$$

$$-12\sqrt{5i}$$

Solution: $-12\sqrt{5}$

1. Which of the following re-expresses the negative square root $-3\sqrt{-32}$ as a complex number in the standard form $a+bi$?

$$6i\sqrt{2}$$

$$-9i\sqrt{2}$$

$$-9\sqrt{2}$$

$$-9\sqrt{2i}$$

Solution: $-9\sqrt{2}$

1. Which of the following re-expresses the negative square root $-5\sqrt{-18}$ as a complex number in the standard form $a+bi$?

$$5i\sqrt{3}$$

$$-15i\sqrt{2}$$

$$-12\sqrt{5}$$

$$-12\sqrt{5i}$$

Solution: $-12\sqrt{5}$

1. Which is the solution to the equation $3(x-5)^{2}=27$, re-expressed as a complex number in the standard form $a\pm bi$?

$$5\pm 9$$

$$5\pm 3i\sqrt{3}$$

$$-3\pm 3i$$

$$3\pm 3i\sqrt{3}$$

Solution:$5\pm 3i\sqrt{3}$

1. Which is the solution to the equation $4(x+2)^{2}=-16$, re-expressed as a complex number in the standard form $a\pm bi$?

$$-2\pm 4$$

$$-2\pm 2i\sqrt{2}$$

$$2\pm 2i$$

$$-2\pm 2i$$

$$Solution: 2\pm 2i$$

1. Which is the solution to the equation $5(x-3)^{2}=-45$, re-expressed as a complex number in the standard form $a\pm bi$?

$$3\pm 3i\sqrt{3}$$

$$3\pm 3i\sqrt{9}$$

$$3\pm 3i$$

$$3\pm 9i$$

Solution:$3\pm 3i$