Additional Problems: Complex Numbers

**Two Solutions for All Quadratic Equations**

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

1. Use the discriminant to determine the number of real solutions of$ 3x^{2}+12x+20=0$. Which of the following statements gives the correct explanation?

There will be two real solutions since the discriminant is positive.

There will be one real solution since the discriminant is zero.

There will be no real solutions since the discriminant is zero.

There will be no real solutions since the discriminant is negative.

\*\*Solution:\*\* There will be no real solutions since the discriminant is negative.

1. Use the discriminant to determine the number of real solutions of $x^{2}-4x+4=0$. Which of the following statements gives the correct explanation?

There will be two real solutions since the discriminant is positive.

There will be one real solution since the discriminant is zero.

There will be no real solutions since the discriminant is zero.

There will be no real solutions since the discriminant is negative.

\*\*Solution:\*\* There will be one real solution since the discriminant is zero.

1. Use the discriminant to determine the number of real solutions of $2x^{2}-3x+1=0$. Which of the following statements gives the correct explanation?

There will be two real solutions since the discriminant is positive.

There will be one real solution since the discriminant is zero.

There will be no real solutions since the discriminant is zero.

There will be no real solutions since the discriminant is negative.

\*\*Solution:\*\* There will be two real solutions since the discriminant is positive.

1. Use the discriminant to determine the number of real solutions of $5x^{2}-2x+1=0$. Which of the following statements gives the correct explanation?

There will be one real solution since the discriminant is negative.

There will be no real solutions since the discriminant is negative.

There will be one real solution since the discriminant is zero.

There will be two real solutions since the discriminant is positive.

\*\*Solution:\*\* There will be no real solutions since the discriminant is negative.

1. Use the discriminant to determine the number of real solutions of $x^{2}+6x+9=0$. Which of the following statements gives the correct explanation?

There will be one real solution since the discriminant is negative.

There will be no real solutions since the discriminant is negative.

There will be one real solution since the discriminant is zero.

There will be two real solutions since the discriminant is positive.

\*\*Solution:\*\* There will be one real solution since the discriminant is zero.

1. Use the discriminant to determine the number of real solutions of $2x^{2}+3x-5=0$. Which of the following statements gives the correct explanation?

There will be one real solution since the discriminant is negative.

There will be no real solutions since the discriminant is negative.

There will be one real solution since the discriminant is zero.

There will be two real solutions since the discriminant is positive.

\*\*Solution:\*\* There will be two real solutions since the discriminant is positive.

1. Solve the quadratic equation $x^{2}+2x+5=0.$ Express the solution in the form $a\pm bi.$

\*\*Solution: $-1\pm 2i$

1. Solve the quadratic equation $x^{2}+4x+8=0.$ Express the solution in the form $a\pm bi.$

\*\*Solution: $-2\pm 2i$

1. Solve the quadratic equation $x^{2}+6x+10=0.$ Express the solution in the form $a\pm bi.$

\*\*Solution: $-3\pm i$

1. Solve the quadratic equation $4x^{2}+2x+5=0.$ Express the solution in the form $a\pm bi.$

\*\*Solution: $-\frac{1}{4}\pm \frac{\sqrt{19}}{4}i$

1. Solve the quadratic equation $3x^{2}+x+2=0.$ Express the solution in the form $a\pm bi.$

\*\*Solution: $-\frac{1}{6}\pm \frac{\sqrt{23}}{6}i$

1. Solve the quadratic equation $5x^{2}-2x+7=0.$ Express the solution in the form $a\pm bi.$

\*\*Solution: $\frac{1}{5}\pm \frac{\sqrt{34}}{5}i$