Name Schlansky

Mr. Schlansky

Date _____

Algebra II

Solving Quadratic Equations Regents Practice

1. The solutions to the equation $-\frac{1}{2}x^2 = -6x + 20$ are

1) $-6 \pm 2i$
2) $-6 \pm 2\sqrt{19}$
3) $6 \pm 2i$
4) $6 \pm 2\sqrt{19}$

$+\frac{1}{2}x^2 \quad +\frac{1}{2}x^2$

$0 = \frac{1}{2}x^2 - 6x + 20$

$a = \frac{1}{2}$

$b = -6$

$c = 20$

$x = \frac{6 \pm \sqrt{(-6)^2 - 4(\frac{1}{2})(20)}}{2(\frac{1}{2})}$

$x = \frac{6 \pm \sqrt{-4}}{1}$

$x = 6 \pm 2i$

2. A solution of the equation $2x^2 + 3x + 2 = 0$ is

1) $-\frac{3}{4} + \frac{1}{4}i\sqrt{7}$
2) $-\frac{3}{4} + \frac{1}{4}i$
3) $-\frac{3}{4} + \frac{1}{4}\sqrt{7}$
4) $\frac{1}{2}$

$a = 2$

$b = 3$

$c = 2$

$x = \frac{-3 \pm \sqrt{(3)^2 - 4(2)(2)}}{2(2)}$

$x = \frac{-3 \pm \sqrt{-7}}{4}$

$x = \frac{-3 \pm i\sqrt{7}}{4}$

3. The solution to the equation $18x^2 - 24x + 87 = 0$ is

1) $-\frac{2}{3} \pm 6i\sqrt{158}$
2) $-\frac{2}{3} \pm \frac{1}{6}i\sqrt{158}$
3) $\frac{2}{3} \pm 6i\sqrt{158}$
4) $\frac{2}{3} \pm \frac{1}{6}i\sqrt{158}$

$a = 18$

$b = -24$

$c = 87$

$x = \frac{24 \pm \sqrt{(-24)^2 - 4(18)(87)}}{2(18)}$

$x = \frac{24 \pm \sqrt{-5688}}{36}$

$x = \frac{24 \pm 6i\sqrt{158}}{36}$

$x = \frac{24}{36} \pm \frac{6i\sqrt{158}}{36}$

$x = \frac{2}{3} \pm \frac{1}{6}i\sqrt{158}$

$i\sqrt{5688}$

$i\sqrt{36} \quad \sqrt{158}$

$6i\sqrt{158}$

4. The solution to the equation $4x^2 + 98 = 0$ is

1) ± 7

2) $\pm 7i$

3) $\pm \frac{7\sqrt{2}}{2}$

4) $\pm \frac{7i\sqrt{2}}{2}$

$4x^2+98=0$
$-98 \quad -98$
$\frac{4x^2}{4} = \frac{-98}{4}$
$\sqrt{x^2} = \sqrt{\frac{-49}{2}}$
$x = \pm i\sqrt{\frac{49}{2}}$
$x = \pm \frac{i(7)}{\sqrt{2}}$
$x = \pm \frac{7i}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}$
$x = \pm \frac{7i\sqrt{2}}{2}$

5. Which equation has $1 - i$ as a solution?

1) $x^2 + 2x - 2 = 0$
2) $x^2 + 2x + 2 = 0$
3) $x^2 - 2x - 2 = 0$
4) $x^2 - 2x + 2 = 0$

1) $x^2+2x-2=0$
$+2 \quad +2$
$x^2+2x=2$
$x^2+2x+\boxed{1}=2+\boxed{1}$
$(x+1)(x+1)=3$
$\sqrt{(x+1)^2}=\sqrt{3}$
$x+1=\pm\sqrt{3}$
$-1 \quad -1$
$x=-1\pm\sqrt{3}$

2) $x^2+2x+2=0$
$-2 \quad -2$
$x^2+2x=-2$
$x^2+2x+\boxed{1}=-2+\boxed{1}$
$(x+1)(x+1)=-1$
$(x+1)^2=-1$
$\sqrt{(x+1)^2}=\sqrt{-1}$
$x+1=\pm i$
$-1 \quad -1$
$x=-1\pm i$

3) $x^2-2x-2=0$
$+2 \quad +2$
$x^2-2x+\boxed{1}=2+\boxed{1}$
$(x-1)(x-1)=3$
$\sqrt{(x-1)^2}=\sqrt{3}$
$x-1=\pm\sqrt{3}$
$+1 \quad +1$
$x=1\pm\sqrt{3}$

4) $x^2-2x+2=0$
$-2 \quad -2$
$x^2-2x=-2$
$x^2-2x+\boxed{1}=-2+\boxed{1}$
$(x-1)(x-1)=-1$
$\sqrt{(x-1)^2}=\sqrt{-1}$
$x-1=\pm i$
$+1 \quad +1$
$x=1\pm i$

6. The roots of the equation $x^2 + 2x + 5 = 0$ are

1) -3 and 1
2) -1, only
3) $-1 + 2i$ and $-1 - 2i$
4) $-1 + 4i$ and $-1 - 4i$

$x^2+2x+5=0$
$-5 \quad -5$
$x^2+2x+\boxed{1}=-5+\boxed{1}$
$(x+1)(x+1)=-4$
$\sqrt{(x+1)^2}=\sqrt{-4}$
$x+1=\pm 2i$
$-1 \quad -1$
$x=-1\pm 2i$

7. Solve for x and express your answer in simplest $a + bi$ form: $x^2 - 6x + 25 = 0$

$-25 \quad -25$
$x^2-6x=-25$
$x^2-6x+\boxed{9}=-25+\boxed{9}$
$(x-3)(x-3)=-16$
$\sqrt{(x-3)^2}=\sqrt{-16}$
$x-3=\pm 4i$
$+3 \quad +3$
$x=3\pm 4i$