CCSS Advanced Algebra 4 AA6: Complex Numbers Assessment A Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**C Level Questions**

1. Use the Quadratic Formula $if ax^{2}+bx+c=0, x=\frac{-b+\sqrt{b^{2}-4ac}}{2a}$ or $x=\frac{-b-\sqrt{b^{2}-4ac}}{2a}$, to find the solutions to each equation:

a. $x^{2}+3x-8=0$ b. $5x^{2}= -6x-1$

2. Use the Quadratic Formula to find the complex roots of the function $g(x)=x^{2}+10x+26$.

3. Simplify each rational expression fully.

 a. $\frac{8x}{x-1}-\frac{8}{x-1}$ b. $\frac{(x+1)(x^{2}-1)}{(x-1)^{2}^{}(x^{2}-2x+1)}$

4. Fully factor the polynomial and sketch a graph.

$f(x) = (x^{2}-36)(x^{2}+36)(x^{2}-7x+6)$

**A/B Level Questions**

5. The equation $x^{2}+3x+c=0$ has complex roots $x=\frac{-3\pm 2i}{2}$. What is the value of $c$? Show your work and/or explain your answer fully.

6. Given that $i=\sqrt{-1},$ show that $i^{6}= -1$$.$

7. The polynomial $p(x) = x^{4}-16 $has 2 real roots ($x=2 and x=-2$). Use polynomial division and the quadratic formula to find the 2 complex roots.

CCSS Advanced Algebra 4 AA6: Complex Numbers Assessment B Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**C Level Questions**

1. Use the Quadratic Formula $if ax^{2}+bx+c=0, x=\frac{-b+\sqrt{b^{2}-4ac}}{2a}$ or $x=\frac{-b-\sqrt{b^{2}-4ac}}{2a}$, to find the solutions to each equation:

a. $x^{2}+2x-9=0$ b. $8x^{2}= -9x-1$

2. Use the Quadratic Formula to find the complex roots of the function $g(x)=x^{2}+12x+37$.

3. Simplify each rational expression fully.

 a. $\frac{4x}{x+3}+\frac{12}{x+3}$ b. $\frac{(x^{2}-4)(x+2)^{2}}{(x-2)^{2}(x^{2}+4x+4)}$

4. Fully factor the polynomial and sketch a graph.

$f(x) = (x^{2}-49)(x^{2}+49)(x^{2}-8x+7)$

**A/B Level Questions**

5. The equation $x^{2}+4x+c=0$ has complex roots $x=\frac{-4\pm 2i}{2}$. What is the value of $c$? Show your work and/or explain your answer fully.

6. Given that $i=\sqrt{-1},$ show that $i^{7}=-i$$.$

7. The polynomial $p(x) = x^{4}-81 $has 2 real roots ($x=3 and x=-3$). Use polynomial division and the quadratic formula to find the 2 complex roots.

CCSS Advanced Algebra 4 AA6: Complex Numbers Assessment C Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Use the Quadratic Formula $if ax^{2}+bx+c=0, x=\frac{-b+\sqrt{b^{2}-4ac}}{2a}$ or $x=\frac{-b-\sqrt{b^{2}-4ac}}{2a}$, to find the solutions to each equation:

a. $x^{2}+2x-11=0$ b. $3x^{2}+4x= -1$

2. Use the Quadratic Formula to find the complex roots of the function $g(x)=x^{2}+14x+50$.

3. Simplify each rational expression fully.

 a. $\frac{10x}{x-4}-\frac{40}{x-4}$ b. $\frac{(x-1)^{2}(x+1)^{2}}{(x^{2}-1)(x^{2}+2x+1)}$

4. Fully factor the polynomial and sketch a graph.

$f(x) = (x^{2}-64)(x^{2}+64)(x^{2}-9x+8)$

**A/B Level Questions**

4. The equation $x^{2}+8x+c=0$ has complex roots $x=\frac{-8\pm 2i}{2}$. What is the value of $c$? Show your work and/or explain your answer fully.

5. Given that $i=\sqrt{-1},$ show that $i^{5}=i$$.$

7. The polynomial $p(x) = x^{4}-256 $has 2 real roots ($x=4 and x=-4$). Use polynomial division and the quadratic formula to find the 2 complex roots.

CCSS Advanced Algebra 4 AA6: Complex Numbers Assessment D Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**C Level Questions**

1. Use the Quadratic Formula $if ax^{2}+bx+c=0, x=\frac{-b+\sqrt{b^{2}-4ac}}{2a}$ or $x=\frac{-b-\sqrt{b^{2}-4ac}}{2a}$, to find the solutions to each equation:

a. $x^{2}+5x-8=0$ b. $7x^{2}+1= -8x$

2. Use the Quadratic Formula to find the complex roots of the function $g(x)=x^{2}+16x+65$.

3. Simplify each rational expression fully.

 a. $\frac{2x}{x+4}+\frac{8}{x+4}$ b. $\frac{(x-2)^{2}(x+2)^{2}}{(x^{2}-4)(x^{2}+4x+4)}$

4. Fully factor the polynomial and sketch a graph.

$f(x) = (x^{2}-81)(x^{2}+81)(x^{2}-10x+9)$

**A/B Level Questions**

4. The equation $x^{2}+6x+c=0$ has complex roots $x=\frac{-6\pm 2i}{2}$. What is the value of $c$? Show your work and/or explain your answer fully.

5. Given that $i=\sqrt{-1},$ show that $i^{8}= 1$$.$

7. The polynomial $p(x) = x^{4}-625 $has 2 real roots ($x=5 and x=-5$). Use polynomial division and the quadratic formula to find the 2 complex roots.