1. (a)   Solve for x and simplify the answer: $x^2 - 6x + 3 = 0$

   (b)   Find the vertex of the quadratic function: $x^2 - 6x + 3$. Graph the function and label the vertex.

2. The height, h, in feet of a projectile launched vertically upward from the top of a 32-foot tall bridge is given by $h = 38 + 16t - 16t^2$, where t is the time in seconds.
   (a)   How long does it take for the projectile to hit the ground? Round you answer to the nearest tenth of a second.
   (b)   When will the projectile reach its maximum height? What is the maximum height reached?

3. (a)   Simplify the complex fraction: $\dfrac{\dfrac{1}{a} - \dfrac{1}{b}}{\dfrac{1}{a^2} - \dfrac{1}{b^2}}$

   (b)   Divide: $\dfrac{4\sqrt{2} + 3}{3\sqrt{2} + \sqrt{3}}$

4. (a)   Multiply: $(12 - 12i)^2$

   (b)   Find the quotient of $\dfrac{5 - 6i}{-5 + 10i}$ and express the result in $a + bi$ form.

5. Solve for x: $x = \sqrt{6x + 18} - 3$

6. (a)   Write the equation of the circle in standard form: $x^2 + y^2 + 24x + 10y + 160 = 0$. Identify the center and radius of the circle.

   (b)   Graph the circle from part (a) and label four points on the circle.

	(a)	(b)
1	$x = 3 \pm \sqrt{6}$	
2	2.1 seconds	0.5 of a second, 42 feet
3	$\dfrac{ab}{b+a}$	$\dfrac{24 - 4\sqrt{6} + 9\sqrt{2} - 3\sqrt{3}}{15}$
4	$-288\boldsymbol{i}$	$-\dfrac{17}{25} - \dfrac{4}{25}\boldsymbol{i}$
5	$x = \{-3, 3\}$	
6	$(x-3)^2 + (y+2)^2 = 16$ Center: (3, -2) Radius = 4	