Quadratic Equations

1. Determine the nature of the roots:
   a. $4x^2 - 5x + 7$
   b. $-3x^2 + 2x + 9$
   c. $5x^2 + 2x - 7$

2. Determine the sum and product of the roots of the following:
   a. $6x^2 - 3x - 7$
   b. $-4x^2 + 5x - 1$
   c. $2x^2 - 6x - 7$

3. Determine the roots of the following quadratic equations using factoring:
   a. $x^2 - 7x - 18 = 0$
   b. $x^2 + 3x - 10 = 0$
   c. $2x^2 + 15x + 7 = 0$
   d. $-3x^2 + 2x + 5 = 0$

4. Determine the roots of the following quadratic equations using the quadratic formula:
   a. $x^2 - 5x - 36 = 0$
   b. $3x^2 - 4x + 11 = 0$
   c. $-2x^2 + 3x + 5 = 0$
   d. $5x^2 + 12x - 4 = 0$

5. Determine the equation given the following roots (use the concept of factors):
   a. $\{3,6\}$ b. $\{-6,-5\}$
   c. $\{-4i,4i\}$ d. $\{5-3i,5+3i\}$
   e. $\left\{\dfrac{2i-3}{4}, \dfrac{2i+3}{4}\right\}$

6. Determine the equation given the following roots (use the sum and product formula):
   a. $\{-2,6\}$ b. $\{-4,-7\}$
   c. $\{-5i,5i\}$ d. $\{2-5i,2+5i\}$
   e. $\left\{\dfrac{7i-4}{2}, \dfrac{7i+4}{2}\right\}$ f. $\left\{\dfrac{3\pm2i}{5}\right\}$