

1. Perform operations. Leave the answer in the form  $a + bi$ .

a)  $(-4 + i) - (2 - 5i)$

b)  $(-2 + i)(2 - 5i)$

c)  $(2i)^4$

d)  $i^{1002}$

e)  $\frac{1}{1+i}$

f)  $\frac{5-i}{3+4i}$

2. Perform operations.

a)  $\sqrt{-3}\sqrt{-12}$

b)  $(3 - \sqrt{-5})(1 + \sqrt{-1})$

3. Solve.

$$x^2 + 2x + 2 = 0$$

4. If  $3 + 4i$  is a solution of a quadratic equation with real coefficients, then \_\_\_\_\_ is also a solution of the equation.