4A

1. Add and simplify.

$(13+5i)+(-6+2i)$

$(13+5i)+(-6+2i)=\square$

(Simplify your answer. Type your answer in the form $a+bi$.)

2. Add and simplify.

$(5+\sqrt{-25})+(2+\sqrt{-4})$

$(5+\sqrt{-25})+(2+\sqrt{-4})=\square$

(Simplify your answer. Type your answer in the form $a+bi$.)

3. Subtract and simplify.

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

$(4-2i)-(-4+i)=\square$

(Simplify your answer. Type your answer in the form $a+bi$.)

4. Multiply.

$(4+3i)(6-7i)$

$(4+3i)(6-7i)=\square$

(Simplify your answer. Type your answer in the form $a+bi$. Do not factor.)

5. Multiply.

$(6+\sqrt{-81})(3+\sqrt{-49})$

$(6+\sqrt{-81})(3+\sqrt{-49})=\square$

(Simplify your answer. Type your answer in the form $a+bi$.)

6. Multiply.

$(3+4i)^2$

$(3+4i)^2=\square$

(Simplify your answer. Type your answer in the form $a+bi$.)

7. Simplify.

$$\frac{9}{4-9i}$$

$$\frac{9}{4-9i} = \square$$

(Type an integer or a simplified fraction. Type your answer in the form a + bi.)

8. Divide and simplify to the form a + bi.

$$\frac{2+9i}{9-i}$$

$$\frac{2+9i}{9-i} = \square$$

(Type a and b as fractions.)

9. Simplify.

$$i^{31}$$

$$i^{31} = \square$$

10. Simplify.

$$i^{24}$$

$$i^{24} = \square$$

11. Solve.

$$3x^2 - 6 = 0$$

The solution is x = $\square$.
(Simplify your answer. Type an exact answer, using radicals as needed. Express complex numbers in terms of i. Use a comma to separate answers as needed.)

12. Solve.

$$4x^2 + 12 = 0$$

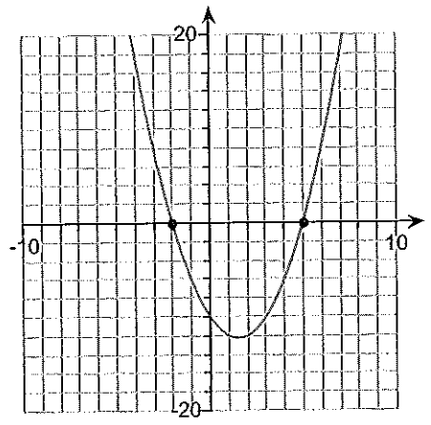
The solution is x = $\square$.
(Type exact answers, using radicals as needed. Express complex numbers in terms of i. Use a comma to separate answers.)

13. Solve.

$x^2 + 100 = 0$

The solution(s) is/are $x =$ ☐.
(Simplify your answer. Use a comma to separate answers as needed. Express complex numbers in terms of i.)

14. Use the graph of f(x) to find the x-intercepts of the graph and the zeros of the function.



The x-intercepts are
☐.
(Type ordered pairs. Use a comma to separate answers.)

The zeros are $x =$ ☐.
(Use a comma to separate answers.)

15. Solve by completing the square.

$x^2 + 2x = 5$

The solutions are $x =$ ☐.
(Simplify your answer. Type exact answers, using radicals as needed. Use a comma to separate answers.)

16. Solve by completing the square.

$x^2 - 4x + 40 = 0$

The solution is $x =$ ☐.
(Simplify your answer. Type an exact answer, using radicals as needed. Express complex numbers in terms of i. Use a comma to separate answers as needed.)

17. Use the quadratic formula to find the exact solutions of the following equation.

$x^2 - 3x = 28$

The solution(s) is/are ☐.
(Simplify your answers. Type exact answers, using radicals as needed. Use a comma to separate answers as needed. Express complex numbers in terms of i. Type each solution only once.)

18. Solve.

$9x^2 + 3x = 20$

$x =$ ☐

(Simplify your answer. Type an exact answer, using radicals as needed. Express complex numbers in terms of i. Use a comma to separate answers as needed.)

19. Solve for x.

$x^2 - x + 10 = 0$

The solution is $x =$ ☐.

(Simplify your answer. Type an exact answer, using radicals as needed. Express complex numbers in terms of *i*. Use a comma to separate answers as needed.)

20. Use the quadratic formula to solve the equation.

$2x^2 - 5x = 1$

The solutions are $x =$ ☐.

(Simplify your answer. Type an exact answer, using radicals as needed. Express complex numbers in terms of *i*. Use a comma to separate answers as needed.)

21. Use the quadratic formula to find exact solutions.

$2x^2 + 4 = 3x$

Choose the correct answer below.

○A. $x = \dfrac{-3 \pm \sqrt{23}}{4}$

○B. $x = \dfrac{3 \pm \sqrt{23}}{4}$

○C. $x = \dfrac{3 \pm \sqrt{23}\,i}{4}$

○D. $x = \dfrac{-3 \pm \sqrt{23}\,i}{4}$

22. Use the quadratic formula to find exact solutions.

$9x^2 + 6x = -2$

$x =$ ☐

(Simplify your answer. Type your answer in the form $a + bi$. Use a comma to separate answers as needed. Use integers or fractions for any numbers in the expression.)

23. Determine the nature of the solutions of the equation.

$x^2 - x + 5 = 0$

The equation has

○A. two real solutions.

○B. two non-real solutions.

○C. one real solution.

24. Find the discriminant, $b^2 - 4ac$, and then determine whether one real-number solution, two different real-number solutions, or two different imaginary-number solutions exist.

$4x^2 - 16x + 16 = 0$

The discriminant is ☐.
(Simplify your answer. Type an integer or a decimal.)

Choose the correct nature of the solutions to the equation.

○A. One real-number solution.

○B. Two different real-number solutions.

○C. Two different imaginary-number solutions or complex conjugates.

25. Find the zero(s) of the following function. Give exact answers and approximate solutions rounded to three decimal places.

$f(x) = x^2 - 7x + 9$

The zero(s) of the function is/are ☐.
(Type an exact answer. Use integers or fractions for any numbers in the expression. Use a comma to separate answers as needed. Express complex numbers in terms of *i*. Type each solution only once.)

The approximate solutions to three decimal places are ☐.
(Use a comma to separate answers as needed.)