

**Academic Dishonesty:** The possession of any unauthorized materials (e.g. calculators, cell phones, headphones, etc.) will result in you receiving a 0 on this exam. Show all of your work and justify all of your conclusions.

1. Find the Distance and Midpoint between (5,1) and (2,3).

2. Evaluate the quotient and write the result in the form  $a + bi$ .

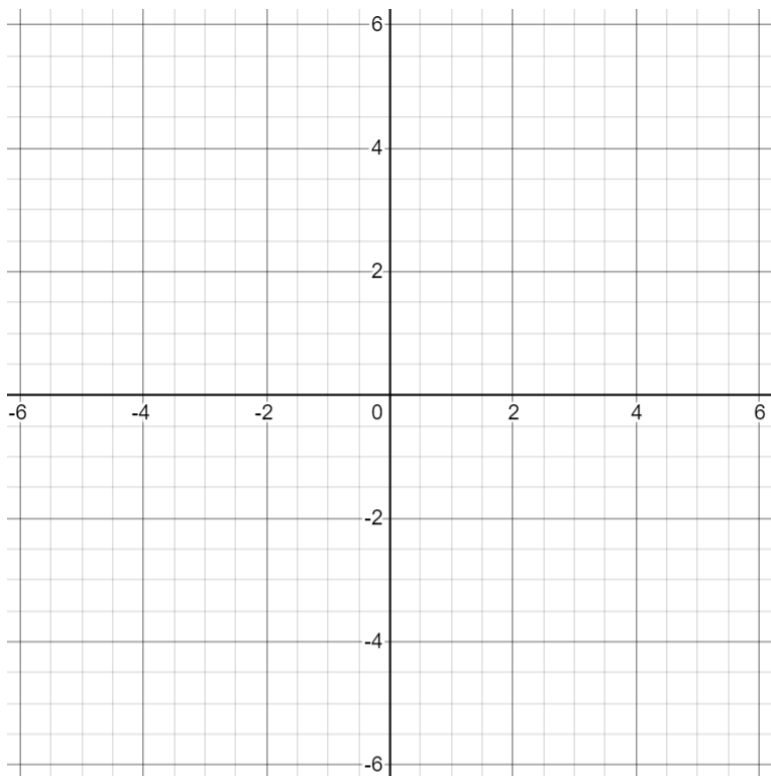
$$\frac{3 - i}{2 - i}$$

3. The given equation involves a power of the variable. Find all real solutions of the equation.

a.  $X^3 - 7 = 20$

b.  $X^2 = 9$

4. Sketch the region given by the set.  
 $\{(x, y) \mid x < 3 \text{ and } y > 2\}$



5. Given the line  $y = \frac{1}{2}x + 2$

a. What is the slope?

b. What is the y-intercept?

6. Find the equation of the line through points  $P(2, -2)$  and  $Q(3, 4)$

7. Find all real solutions of the equation by completing the square.  $x^2 + 8x + 7 = 0$

8. Find all real solutions of the equation  $x^4 - x^3 - 12x^2 = 0$