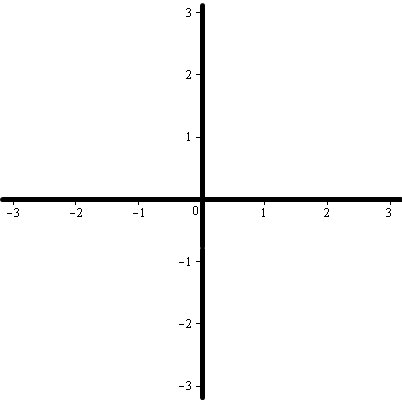
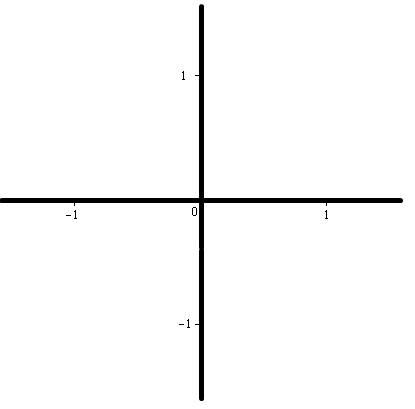
**Complex Analysis**

***Visualization***

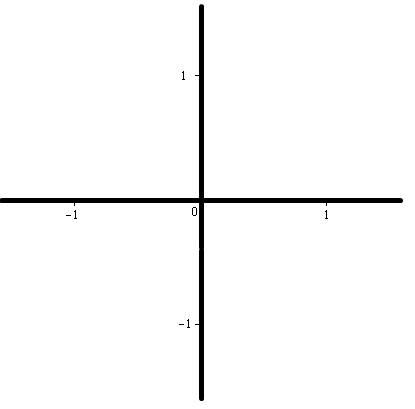
1. Consider and . Draw the vectors and



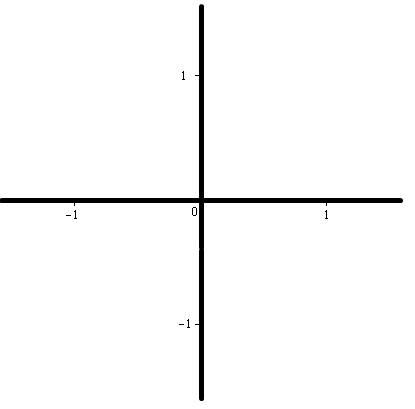
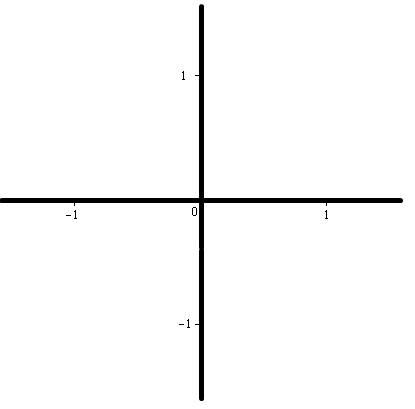
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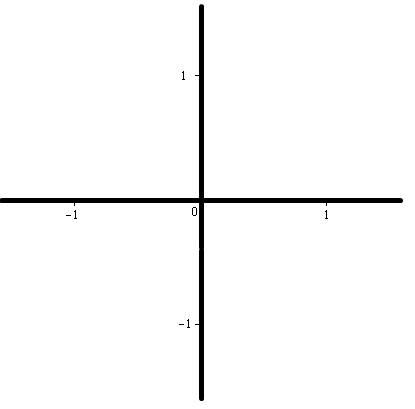
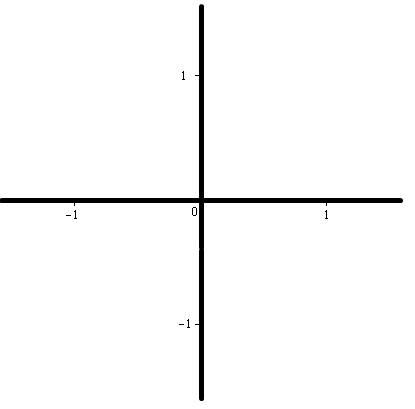
1. Draw the following vectors: , , , and



1. Describe in simple geometric terms what happens to a vector when:
   1. it is multiplied by
   2. it is multiplied by
   3. it is multiplied by
   4. it is squared
2. Consider the vector shown and draw the new vector(s) as indicated (the gray circle represents the unit circle)



Find all four 4th roots (approx.) Find



Find all third roots of unity Find one sixth root