

5. Carry out each calculation in the complex numbers:

(a) $(3 + 8i) + (-3 + 6i)$

(b) $(-2 + 7i) + (2 + i)$

6. Consider a Julia Set Defined by the rule $f(z) = z^2 - 2$.

(a) Apply the rule five times to each of the following numbers, and write down the numbers you get. Include as many decimal places as you can fit in the box.

i. $z = 2$

iteration:	1	2	3	4	5
value:					

ii. $z = 2.1$

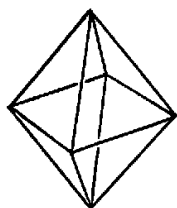
iteration:	1	2	3	4	5
value:					

(b) Based on what you found above, would either of those numbers be colored black in the Julia Set?

7. What is a connected graph? Does every possible graph with five vertices and five edges have to be connected? Either explain why this must always be true or else draw a graph with five vertices and five edges that is not connected.

8. What would it look like if a 4D sphere passed through our 3D world?
9. A graph has six vertices. What is the largest possible number of edges that it could possibly have?
10. Paris Hilton tells you that she has drawn a connected planar graph with five vertices and six edges that divides the plane into six regions. Either draw a graph like Paris's or explain why she must be mistaken.
11. (a) What is the difference between a **polygon** and a **polyhedron**?
- (b) How many **regular polygons** are possible?
- (c) How many **regular polyhedra** are possible?

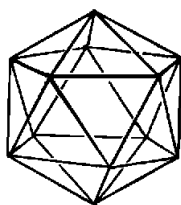
12. Based on the pictures, determine if each shape is a Platonic Solid. If it is a Platonic Solid, give its name. If it's not a Platonic Solid, write "not a Platonic Solid."



(a)



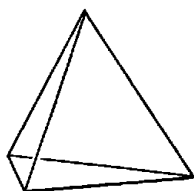
(b)



(c)



(d)



(e)