

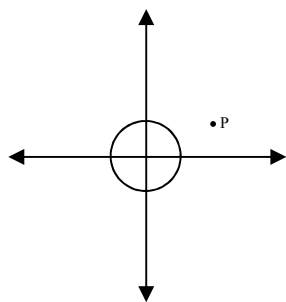
# Fractals & Chaos – Complex Numbers Transformations

Name: \_\_\_\_\_

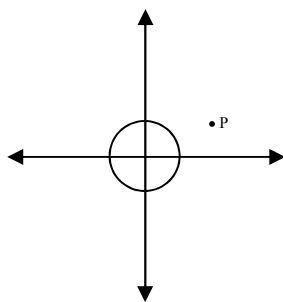
	Complex Number		...as addition		...as multiplication	
	Rectangular Form	Polar Form	Horizontal Translation	Vertical Translation	Rotation	Dilation
ex.	$1 - i$	$[\sqrt{2}, -45^\circ]$	Right 1	Down 1	$-45^\circ$	$\sqrt{2}$
1)	6					
2)	$-0.1i$					
3)	$1 + \sqrt{3}i$					
4)	$-1 - 3i$					
5)			0	Up 2		
6)			Left 1/2	0		
7)			Right 3	Down 4		
8)			Left 6	Up 6		
9)			Left 4/5	Down 1/5		
10)					$120^\circ$	4
11)					$90^\circ$	1/3
12)					$10^\circ$	0.9
13)					$-70^\circ$	1.2
14)					$150^\circ$	1
15)					$-135^\circ$	75%
16)					$-225^\circ$	225%

For each, show the image of point P after the specified transformation (Unit Circles are shown for reference)

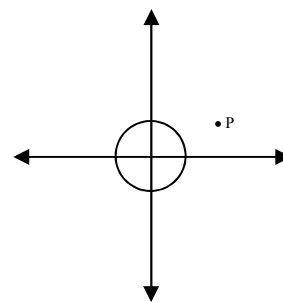
1)  $z \rightarrow 2z$



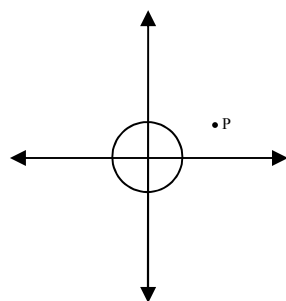
2)  $z \rightarrow z+i$



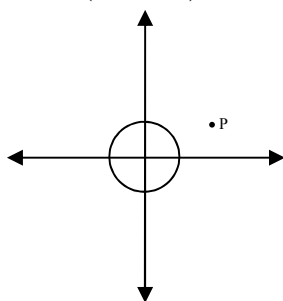
3)  $z \rightarrow z+(2-3i)$



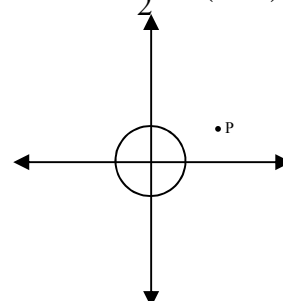
4)  $z \rightarrow iz$



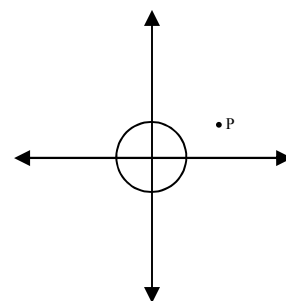
5)  $z \rightarrow (0-0.5i)z$



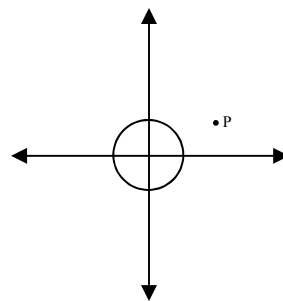
6)  $z \rightarrow -\frac{1}{2}z+(2-i)$



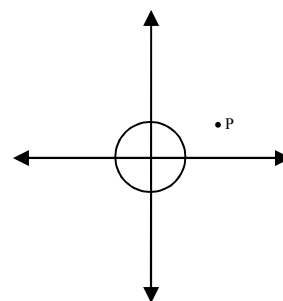
7)  $z \rightarrow (0+2i)z-3$



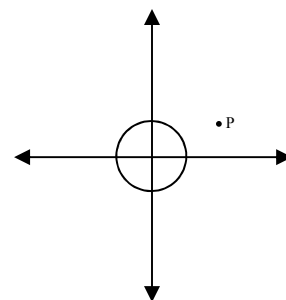
8)  $z \rightarrow 1.5z-2i$



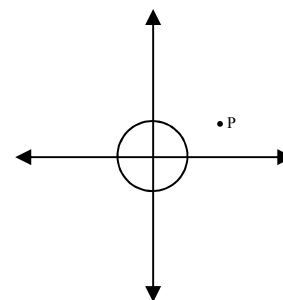
9)  $z \rightarrow (1+i)z$



10)  $z \rightarrow (1-\sqrt{3}i)z+i$



12)  $z \rightarrow z^2$



13)  $z \rightarrow z^2+1$

