Precalc. BC **Polar/Cmplx/Vectors** **Name_____**

1. The angle formed by the vectors *u*(4, -5) and *v*(-1, 8) is

a) 32° b) 57° c) 58° d) 123° e) 148°

2. The distance between the polar points A(8, 110°) and B(5, 25°) is

a) 3 b) 9 c) 10 d) 12 e) 82

3. How many solutions of $x^{19}-1=0$ are of the form a+b*i*, with a<0<b?

a) none b) 3 c) 4 d) 5 e) 6

4. If w = 2cis120° and z = 5cis45°, then w - z is

a) -3cis75° b) -3cis165° c) -4.5 -1.8*i*
d) 2.8 - 5.3*i* e) 2.8 + 5.3*i*

5. If the parameter is eliminated from the equations $x=t^2+1$ and $y=2t$, then the relation between *x* and *y* is

a) $y=x-1$ b) $y=1-x$ c) $y^2=x-1$
d) $y^2=(x-1)^2$ e) $y^2=4x-4$

6. If $f(x)=\frac{x^2-1}{x+1}$, what does $f(i)$ equal?

a) 0 b) $\frac{2}{1+i}$ c) $i-1$
d) -2 e) $1+i$

7. An equation in polar form equivalent to $x^2+y^2-4x+2=0$ is

a) $r=4\cos\theta+2$ b) $r^2=4\cos\theta+2$
c) $4r=\cos\theta$ d) $r^2-4r\cos\theta+2=0$
e) $r^2=4r\cos\theta$

8. The norm (magnitude) of the vector $\vec{V}=3i-\sqrt{2}j$ is

a) 4.24 b) 2.45 c) 3.61
d) 3.32 e) 1.59

9. The graph of the curve represented by $\begin{cases}x=\sec\theta\\y=\cos\theta\end{cases}$ is

a) a line b) a hyperbola c) an ellipse
d) a line segment e) a portion of a hyperbola

10. Which of the following is **not** a fifth root of 1?

a) 1*cis*0 b) 1*cis*72° c) 1*cis*154°
d) 1*cis*216° e) 1*cis*288°

11. $(2cis50°)^3$ written in rectangular form is

a) $6.9+4i$ b) $4-6.9i$ c) $6.9-4i$
d) $-6.9+4i$ e) $-4+6.9i$

12. A unit vector parallel to $\vec{V}=\langle 2,-3,6\rangle$ is

a) $\langle -2,3,-6\rangle$ b) $\langle 6,-3,2\rangle$ c) $\langle 0.29,0.43,-0.86\rangle$
d) $\langle -0.29,0.43,-0.86\rangle$ e) $\langle -0.36,-0.54,1.08\rangle$

13. The area of the region enclosed by the graph of $r=\frac{1}{\sin\theta+\cos\theta}$ and the *x*- and *y*-axes is

a) 0.48 b) 0.50 c) 0.52
d) 0.98 e) 1.00

14. The reciprocal of $2+6i$ is

a) $-\frac{1}{16}+\frac{3}{16}i$ b) $\frac{1}{16}+\frac{3}{16}i$ c) $\frac{1}{20}-\frac{3}{20}i$
d) $\frac{1}{20}+\frac{3}{20}i$ e) none of these