

Name _____

ET 332b
COMPLEX NUMBER ARITHMETIC HOME WORK

Convert the following complex numbers from polar to rectangular form. Show work for full credit. All angles are in degrees.

1.) $120\angle 120 =$ _____

2.) $60\angle -50 =$ _____

3.) $15\angle -36.6 =$ _____

4.) $5\angle 90 =$ _____

Convert the following complex numbers from rectangular to polar form.

5.) $30+j40 =$ _____

6.) $25+j0 =$ _____

7.) $-46-j95 =$ _____

8.) $45-j45 =$ _____

Add the following complex numbers. Show result in rectangular form.

9.) $170\angle -60 + (75+j10) =$ _____

10.) $(67+j38) + (100-j50) =$ _____

11.) $(-12-j75) + (37+j0) =$ _____

12.) $9.434\angle 58 + 9.849\angle -24 =$ _____

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Subtract the following complex numbers. Show the results in rectangular form.

13.) $(15+j2) - (3+j12) =$ _____

14.) $(21-j50) - (11-j23) =$ _____

15.) $6.4\angle 51.34 - 10\angle 180 =$ _____

16.) $(6+j0) - (0+j9) =$ _____

Multiply the following complex numbers. Show the results in polar form.

17.) $(120\angle -120) \circ (5\angle -30) =$ _____

18.) $(120\angle 0) \circ (7.5\angle -36.7) =$ _____

19.) $(5\angle -90) \circ (10\angle 90) =$ _____

20.) $(45\angle 180) \circ (90\angle -60) =$ _____

Divide the following complex numbers. Show the results in polar form.

21.) $(1\angle 0) / (5\angle -24) =$ _____

22.) $(40+j30) / (2\angle 75) =$ _____

23.) $(4-j4) / (3-j8) =$ _____

24.) $(10\angle 240) / (2\angle 120) =$ _____

25.) $(2\angle 75) / (7-j10) =$ _____

Invert the following complex numbers. Show the results in polar form

26.) $1/(4\angle 75) = \underline{\hspace{2cm}}$

27.) $1/(10\angle -22) = \underline{\hspace{2cm}}$

28.) $1/(4+j5) = \underline{\hspace{2cm}}$

29.) $1/(-3-j8) = \underline{\hspace{2cm}}$

30.) $1/(5-j9) = \underline{\hspace{2cm}}$

Take the conjugate of the following numbers. Show the results in polar form

31.) $(6-j4)^* = \underline{\hspace{2cm}}$

32.) $(3\angle 45)^* = \underline{\hspace{2cm}}$

33.) $(7-j9)^* = \underline{\hspace{2cm}}$