

11. $(4\text{cis}50^\circ)^3$

$4^3 \text{cis } 3(50+360n)$

$64 \text{cis } 150 + 1080n$

$64 \text{cis } 150^\circ$

NOT NECESSARY HERE
→ adding this will just give coterminal for answer we have

12. $(3\text{cis}100^\circ)^4$

$3^4 \text{cis } 4(100+360n)$

$81 \text{cis } 400 + 1440n$

$81 \text{cis } 400^\circ$

same as # 11

13. $\sqrt[7]{16\text{cis}80^\circ} (16 \text{cis } 80^\circ)^{\frac{1}{7}}$

$16^{\frac{1}{7}} \text{cis } \frac{1}{7}(80+360n)$

$2 \text{cis } 20 + 90n$ adding this gives different answers.

$2 \text{cis } 20^\circ, 2 \text{cis } 110^\circ, 2 \text{cis } 200^\circ, 2 \text{cis } 290^\circ$

14. $\sqrt[3]{125\text{cis}99^\circ} (125 \text{cis } 99^\circ)^{\frac{1}{3}}$

$125^{\frac{1}{3}} \text{cis } \frac{1}{3}(99+360n)$

$5 \text{cis } 33 + 120n$

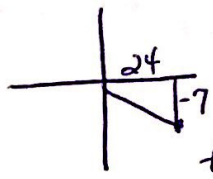
$5 \text{cis } 33^\circ, 5 \text{cis } 153^\circ, 5 \text{cis } 273^\circ$

15. Find the points of intersection of $r = 5 + 4\cos\theta$ and $r = 1 + 6\sin\theta$

$(6.54, 67.38^\circ) (1, 180^\circ)$

Write the complex number in polar form.

16. $24 - 7i$

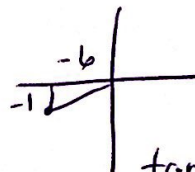


$25 \text{cis } 343.7^\circ$

$\tan^{-1}(\frac{-7}{24}) = -16^\circ + 360$

Write the polar form as a complex number in a + bi form.

17. $-6 - i$



$\sqrt{37} \text{cis } 189.5^\circ$
9.46

$\tan^{-1}(\frac{-1}{-6}) = 9.46 + 180$

18. $6\text{cis}300^\circ$

$x = 6 \cos 300$

$y = 6 \sin 300$

$3 - 5.2i$

19. $2\text{cis}80^\circ$

$x = 2 \cos 80$

$y = 2 \sin 80$

$0.35 + 1.97i$

20. A person hunting shoots their gun with a velocity of 300 m/sec east and 200 m/sec north. At time $t = 0$ seconds, the person is at the point (3, 20).

a) Write parametric equations for the bullet's path.

$x = 3 + 300T$

$y = 20 + 200T$

b) If the bullet continues on this path and the target is at 903 m east, how many seconds will it take to reach the target?

$903 = 3 + 300T$

$900 = 300T$

$T = 3 \text{ sec}$

c) How many meters north is the target?

$y = 20 + 200(3)$

$y = 20 + 600$

$y = 620$