

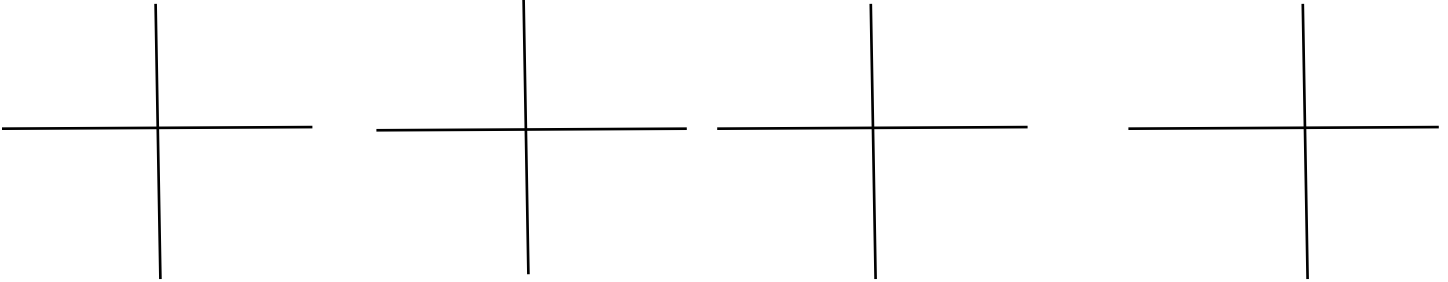
I. Sketch each of the following angles in standard position.

1. 150°

2. -120°

3. $-\frac{7\pi}{4}$

4. $\frac{2\pi}{3}$



II. Determine the quadrant in which the terminal side of the angle lies.

5. 130° _____

6. -336° _____

7. 285° _____

8. -260° _____

9. $\frac{22\pi}{3}$ _____

10. $\frac{7\pi}{5}$ _____

11. $-\frac{17\pi}{3}$ _____

12. $-\frac{\pi}{12}$ _____

13. 3.5 _____

14. -1 _____

III. Give 2 coterminal angles, one positive and one negative for each of the following.

15. 34° _____

16. -45° _____

17. -120° _____

18. 300° _____

19. $\frac{4\pi}{3}$ _____

20. $\frac{11\pi}{6}$ _____

21. $-\frac{7\pi}{6}$ _____

22. $\frac{\pi}{4}$ _____

IV. Express each of the following in radian measure. Leave your answer in terms of π .

23. 150° _____

24. 315° _____

25. -240° _____

26. 115° _____

27. 345° _____

28. -216° _____

V. Express each of the following in degree measure.

29. $\frac{5\pi}{9}$ _____

30. $-\frac{7\pi}{12}$ _____

31. $\frac{11\pi}{5}$ _____

VI. Find the angle in radian measure between 0 and 2π which is coterminal with the following.

32. $\frac{11\pi}{4}$ _____

33. $\frac{23\pi}{4}$ _____

34. $\frac{31\pi}{6}$ _____

35. $\frac{40\pi}{3}$ _____

36. $-\frac{19\pi}{3}$ _____

37. 121π _____

38. $\frac{62\pi}{5}$ _____

VII. Find the reference angle for each of the following.

39. 208° _____

40. $\frac{7\pi}{4}$ _____

41. $\frac{14\pi}{5}$ _____

42. -292° _____

43. $-\frac{5\pi}{3}$ _____

44. -445° _____

45. $\frac{13\pi}{9}$ _____

46. 517° _____

47. -165° _____

48. $\frac{17\pi}{6}$ _____

49. 322° _____

50. $-\frac{12\pi}{7}$ _____