Your Personally Illustrated Examples
of Definitions, Postulates, and Theorems
of Quarter 3

This second quarter we continued our journey of making mathematical proofs. This quarter's important Definitions, Postulates and Theorems often used in proofs are listed in the next few pages of this pdf document. For each:

1. Write out the definition, postulate, or theorem (try to make it a If-then statement).

2. Draw an example diagram to **illustrate the hypothesis** of the definition, postulate, or theorem.

3. **State your example's conclusion** based on the definition, postulate, or theorem you are illustrating.

Chapter 9 - Properties of Transformations

1. Translation Theorem (p. 565)

2. Vectors (p. 566)

    (a) Initial Point

    (b) Terminal Point

    (c) Component Form

3. Matrices (p. 572)
    (a) matrix

    (b) element

    (c) dimensions (or order) of a matrix

    (d) point matrix

    (e) polygon matrix

4. Add, subtract and Multiply of Matrices (p. 573-574)

5. Line Reflections (pp.581-582)

    (a) (a, b) Reflected in the x-axis

    (b) (a, b) Reflected in the y-axis

    (c) (a, b) Reflected in the line $y = x$

    (d) (a, b) Reflected in the line $y = -x$

6. Reflection Theorem (p. 583)

7. Reflection Matrices (p. 584)

8. Rotation (p. 590-591)

    (a) center of rotation

    (b) angle of rotation

9. Coordinate rules for Rotations around the origin (p. 591)
    (a) Rotation of $90°$: $(a, b) \rightarrow$

    (b) Rotation of $180°$: $(a, b) \rightarrow$

    (c) Rotation of $270°$: $(a, b) \rightarrow$

10. Rotation Matrices (p. 592)

11. Rotation Theorem (p. 593)

12. Definition of Glide Reflection (p. 600)

13. Composition Theorem (601)

14. Reflections in Parallel Lines Theorem (601)

15. Reflections in Intersecting Lines Theorem (602)

16. Line Symmetry (p. 611)

17. Rotational Symmetry (p. 612)

Chapter 10

18. Define: (p 641)

   (a) circle

   (b) center

   (c) radius

   (d) chord

   (e) diameter

   (f) secant

   (g) tangent

19. Perpendicular Tangents (p. 643)

20. Congruent Tangents to a external Point(p. 644)

21. Measuring Minor and Major Arcs (p. 649)

22. Arc Addition Postulate (p. 650)

23. Congruent Chords Theorem (p. 654)

24. Perpendicular Bisector of a Chord is a Diameter (p. 655)

25. Perpendicular Diameters Bisect Chord (p. 655)

26. Equidistant Chords are Congruent (p. 656)

27. Inscribed Angles Theorem (p. 662)

28. Inscribed Angles with the Same Inscribed ArcTheorem (p. 662)

29. Inscribed Right Angle Theorem (p. 664)

30. Inscribed Quadrilateral Theorem (p. 665)

31. Angles Inside Theorem (p. 673)

32. Angles Outside Theorem (p. 673)

33. Segments of Chords Theorem (p. 681)

34. Segments of Secants Theorem (p. 682)

35. Segments of Secants and Tangents Theorem (p. 683)

36. Standard Equation of a Circle (p.689)

Chapter 11

37. Circumference of a Circle (p. 710)

38. Arc Length Corollary (p. 711)

39. Area of a Circle (p. 719)

40. Area of a Sector (p. 720)

41. Area of a Regular Polygon (p. 727)

42. Probability and Length (p. 733)

43. Probability and Area (p. 734)

44. Types of Solids (p. 742)

   (a) Prism

   (b) Pyramid

   (c) Cylinder

   (d) Cone

   (e) Sphere

45. Euler's Theorem (p. 743)

46. Volume of a Cube Postulate (p. 751)

47. Volume Congruence Postulate (p. 751)

48. Volume Addition Postulate (p. 751)

49. Volume of a Prism (p. 752)

50. Volume of a Cylinder (p. 752)

51. Cavalieri's Principle (p. 753)

52. Volume of a Pyramid (p. 763)

53. Volume of a Cone (p. 763)

54. Solids of revolution (p.772)

55. Surface Area of a Sphere (p. 774)

56. Volume of a Sphere (p. 776)

57. Similar Solids Theorem (p. 784)

Chapter 12

58. Definitions (p. 811-812)

   (a) Outcome

   (b) Event

   (c) Sample Space

   (d) Probability of an Event

   (e) Theoretical Probability

   (f) Experimental Probability

59. Permutation (p. 819-820)

60. Combination (p. 824)

61. Definitions (p. 831)
    (a) Compound Event

    (b) Disjoint

    (c) Mutually Exclusive

62. Definitions (p. 839)

    (a) Independent Events

    (b) Dependent Events

    (c) Conditional Probability