

## AFM - Final Exam Review Guide

- The data shows the average temperatures In January for several cities in the mid- South  
**49.1 50.8 42.9 44 44.2 51.4 45.7 39.9 50.8 45.7 52.4 50.4**
  - Find the mean, median and the mode
  - Find the values of Q1,Q2,Q3, interquartile range and semi-interquartile range, and the outliers.
  - Sketch a Box-and –Whisker plot.
- A family goes grocery shopping every week. In a month the cost of the groceries are :  
**\$82.42 \$91.5 \$78.99 \$89.02**
  - Find the mean
  - Find the mean deviation
  - Find the standard deviation
  - Within how many standard deviation of the mean is a cost of \$70.0?
  - Within how many standard deviation of the mean is a cost of \$112.0?

**A set of 1000 values has a normal distribution. The mean of the data is 120, and the standard deviation is 20.**

- How many values are within two standard deviations from the mean?
- What percent of data is in the range 100 to 130?
- What percent of the data is in the range 90 to 115?
- Find the range about the mean which includes 72.9% of the data?
- Find the probability that a value selected at random from the data will be within the limits 110 and 150?
- Find the probability that a value selected at random from the data will be greater than 140?
- Find the point below which 81.5 % of the data lie?
- A school has different course offerings: 6 in math, 2 in English, 3 in science, & 5 in social studies. How many different 4 course student schedules are possible if a student must have one course from each subject area?
- How many sets of 3 books can be chosen from a set of 8 ?
- How many different starting teams consisting of one center, two forwards, and two guards can be chosen from a basketball squad consisting of two centers, seven forwards, and six guards?
- How many ways can the letters in the word *banana* be arranged?
- How many ways can 8 different chairs be arranged in a circle?
- The odds of rolling a sum of 9 when two number cubes are rolled are  $\frac{1}{8}$ . What is the probability of rolling a sum of 9 when two number cubes are rolled?
- If two cards are drawn at random from a standard deck of cards with no replacement, find the probability that both cards are tens.

**FOR #s 17 – 19, USE THE TABLE BELOW:**

JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
7	6	9	12	13	15	18	17	11	9	9	12

17. Find the mean deviation of the data.

18. Find the standard deviation of the data.

19. What are the quartile and whisker values used to create a box-and-whisker plot for the data?

**FOR #s 20 – 22, A SET OF 100 VALUES HAS A NORMAL DISTRIBUTION WITH A MEAN OF 50 AND A STANDARD DEVIATION OF 5.**

20. What percent of the data is between 40 and 50?

21. Find the interval about the mean within which 90% of the data lie.

22. Find the probability that a value selected at random from this data is between 49.5 & 50.5.

23. Give the angle measure, in degrees, represented by 3.25 rotations counterclockwise.

24. Identify all coterminal angles between  $-360^\circ$  &  $360^\circ$  for the angle whose measure is  $-620^\circ$ .

25. Determine the reference angle for  $1246^\circ$ .

26. Find the value of the tangent for angle A if  $a = 8$ ,  $c = 15$ ,  $C = 90^\circ$ .

27. Name the reciprocals of each of the trig functions.

28. If  $\cot \Theta = 3.85$ , find the  $\tan \Theta$ .

29. Find  $\sin(-270^\circ)$ .

30. Find the exact value of  $\csc 300^\circ$ .

31. Find the exact value of  $\csc \Theta$  for angle  $\Theta$  in standard position if the point  $(7,24)$  lies on its terminal side.

32. Find the height of the building to the nearest foot if the point where the angle of elevation from the end of the shadow to the top of the building is  $63^\circ$  and that distance is 200 feet.

33. Find the measure of angle B to the nearest tenth of a degree if  $b = 10$ ,  $c = 14$ ,  $C = 70^\circ$ .

34. In triangle ABC,  $A = 27.58^\circ$ ,  $B = 78.38^\circ$ ,  $c = 19$ . Find a to the nearest tenth.

35. Evaluate:  $\tan\left(\sin^{-1}\frac{\sqrt{3}}{2} + \tan^{-1}\sqrt{3}\right)$ .

36. Change  $140^\circ$  to radian measure in terms of  $\pi$ .

37. Change  $\frac{66\pi}{37}$  to degree measure.

38. Simplify  $\left(\frac{54x^7y^{10}}{2x^{-2}y}\right)^{\frac{2}{3}}$ .

39. Express  $(2x^2)^{\frac{1}{2}}(2x)^{\frac{1}{3}}$ .

40. Evaluate  $16^{\frac{\pi}{2}}$  to the nearest thousandth.

41. In 2000, the bird population in a certain area was 1,000. The number of birds increases exponentially at a rate of 7% per year. Predict the population in 2005.

42. A scientist has 90 grams of a radioactive substance that decays at an exponential rate. If  $k = -0.4$ , how many grams of radioactive substance remain after 5 days?

43. Evaluate:  $\log_8 \frac{1}{16}$ .

44. Solve  $\log_{15} x + \log_{15}(x-2) = \log_{15} 15$ .

45. Evaluate:  $\log_6 37.2$ .

46. Solve  $3^x = 5^{x+2}$ .

47. Find the amount of time required for an investment to double at a rate of 10.3% if the interest is compounded continuously.

48. Write an equation in slope-intercept form of a line passing through  $A(-2,3)$  &  $(5,5)$ .

49. Find  $DE$  if  $\begin{bmatrix} -1 & 3 & 4 \\ 6 & -2 & -8 \end{bmatrix}$  &  $E = \begin{bmatrix} 1 & -2 \\ 0 & 4 \\ -3 & 4 \end{bmatrix}$ .

50. Find the value of  $\begin{vmatrix} 5 & 4 & -2 \\ 3 & -2 & 3 \\ 0 & 5 & -2 \end{vmatrix}$ .

51. The graph of an even is symmetric with respect to what?

52. Given the parent function  $p(x) = [x]$ , what transformations occur in the graph of  $p(x) = \frac{1}{2}[x+3]-3$ ?

53. List the possible rational roots of  $42x^3 + 17x^2 + 23x - 2 = 0$ .

54. Determine the rational roots of  $6x^4 + 7x^3 - 21x^2 - 21x + 9 = 0$ .

55. Find the value of  $k$  so that the remainder of  $(-kx^4 - 146x^2 + 32) \div (x + 4)$  is 0.
56. Find the number of possible positive real zeros for  $f(x) = 6 + x^4 + 2x^2 - 5x^3 - 12x$ .
57. Find the 10<sup>th</sup> term in the arithmetic sequence 14, 10.5, 7, ....
58. Find the 5<sup>th</sup> term in the geometric sequence  $\sqrt{3}y^3, -3y^5, 3\sqrt{3}y^7, \dots$ .
59. Express  $27 + 9 + 3 + \dots$  using sigma notation.
60. Expand  $(2x - 3)^5$ .