

Math 1001 Practice Final Exam

- At T.G.I. Friday's, there are 8 appetizers, 22 entrées, and 10 desserts on the menu. How many different meals can you choose if you select one appetizer, one entrée, and one dessert?
- Hector is building a home theatre system consisting of a tuner, an optical disk player, speakers, and a high definition TV. If he can select from three tuners, six speakers, three optical disk players, and five TVs, in how many ways can he configure his system?

3. Use inductive reasoning to predict the next three terms in the following sequences:

a) 22, 19, 16, 13, _____, _____, _____

(b) 1, 3, 9, 27, _____, _____, _____

(c) 2, 3, 5, 8, 13, _____, _____, _____

4. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, and let $A = \{1, 4, 7\}$, $B = \{1, 2, 3, 4, 5\}$, and $C = \{1, 2, 4, 8\}$. Find the following sets:

(a) $B - A$

(b) $A' \cap (B' \cup C)$

5. How many subsets are there in the set $\{a, b, c\}$?

6. How many subsets are there in the set $\{\square, \square, \Delta, \perp, Y\}$?

7. Let p represent some true statement, q some false statement, and r some False statement. Determine the truth value of the following statements.

$(p \wedge \sim q) \vee (\sim r)$ _____

$(q \wedge \sim r) \rightarrow (p)$ _____

8. Write in words the converse and the inverse for the given statement. *Also know Contrapositive*

“If it glitters, then it is gold.”

(a) Converse: _____

(b) Inverse: _____

9. *Identify the form of the argument. Know all six forms of arguments.*

(a) I'll major in music or art history

I am not majoring in music.

Therefore, I am majoring in art history. _____

(b) If Felicia enjoys spicy food, then she will enjoy this Cajun chicken meal.

Felicia does not enjoy this Cajun chicken meal.

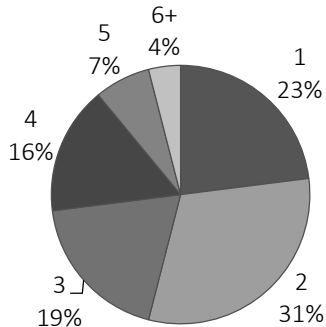
Therefore, Felicia does not enjoy spicy food. _____

10. Negate the following statement: "Some cats are jerks." _____

11. Negate the following statement: "All men eat." _____

12. Refer to the pie chart. The number of people in the household (1, 2, 3, 4, 5, and 6 or more) and the associated percentages are given. In a recent census, the state of Georgia had a population of approximately 5,120,000 households. Approximate how many households had 4 or less members.

Georgia Household Sizes



13. Here is a sample of golf scores for Gary Putter, Jr. so far this year:
89 90 87 95 86 81 109 105

- (a) Find the mean.
- (b) Find the median.
- (c) Find the standard deviation.
- (d) Find the min, Q1, Q2, Q3, and max.

14. Here is sample of test scores for Gary Putter.
70 50 80 12 90 50 100 95 77

- (a) Find the mean.
- (b) Find the median.
- (c) Find the standard deviation.
- (d) Find the min, Q1, Q2, Q3, and max.

15. If a distribution has a mean of 78 and a standard deviation of 5, to what z-score does a raw score of 87 correspond?

16. Finding the x and y intercepts of: a) $2x + 3y = 6$ b) $-4x + 8y = 11$

17. a) Find a linear equation whose graph passes through (3, 5) and (4, -2).

b) Find the linear equation whose graph passes through (5,6) and has a slope of 3.

18. Are the following lines parallel or perpendicular?

$$y = 2x + 4 \quad \text{and} \quad y = -2x + 5$$

Parallel Lines have the exact same slope. Example: $y = 3x + 8$ and $-3x + y = 2$ both have a slope of 3.

Perpendicular lines have slopes that are negative reciprocals of each other.

$$\text{Ex) } m = \frac{1}{2} \text{ and } m = -2 \qquad \text{Ex) } m = \frac{3}{7} \text{ and } m = -\frac{7}{3}$$

19. a) Using the following data, please state the line of best fit using linear regression.

b) State the quadratic of best fit using quadratic regression.

X	5	6	7	8	9	10	11	12	13
Y	4	-2	8	7	10	11	-2	5	7

20. Kenya is considering two satellite TV systems. Global Communications charges \$240 for installation and \$35 per month. World Communications charges \$350 for installation and \$28 per month. After how many months will World Communications be the better buy?

21. a) Find the equation of a line passing through $(-1, 1)$ and perpendicular to the line $y = \frac{-1}{3}x + 2$

b) Find the equation of a line passing through $(2, 3)$ and perpendicular to the line $y = 4x + 1$

22. Solve the quadratic equation: a) $2x^2 + 7x + 4 = 0$ b) $0 = x^2 + 2x - 3$.

23. Solving a system of equations by elimination.

$$\begin{array}{l} \text{a) } 2x - y = 10 \\ \quad -x + 2y = -5 \end{array} \qquad \begin{array}{l} \text{b) } 3x - 9y = 6 \\ \quad -x + 3y = -2 \end{array}$$

24. Finding the vertex of a parabola given by the following:

$$\text{a) } 2x^2 + 8x + 4 = y \qquad \text{b) } y = 4x^2 - 8x + 4$$

25. Which of the following points does not lie on the graph of $y = 7^x$?

$$\text{a) } (2, 49) \qquad \text{b) } (1, 7) \qquad \text{c) } (-1, 7) \qquad \text{d) } (3, 343)$$

26. Which of the following points does not lie on the graph of $y = x^2 + 3$

$$\text{a) } (4, 11) \qquad \text{b) } (1, 4) \qquad \text{c) } (-1, 2) \qquad \text{d) } (-2, 7)$$

27. a) The formula for the accumulated amount of an investment is given by $A = P(1 + i)^n$, where P is the principle, i is the periodic interest rate, and n is the total number of interest periods (or compoundings). If \$2600 is to be invested with quarterly compounding at $5\frac{1}{5}\%$ annual interest rate, what will the accumulated amount be in 5 years? Round your solution down to the nearest hundredth.

b) The formula $A = Pe^{rt}$ gives the accumulated amount, A of an investment when P is the initial investment or principle, r is the annual interest rate, and t is the time in years. We are assuming continuous compounding and no deposits or withdrawals. For an initial investment of \$4,000, compounded continuously at 3.2% annual interest, find, to the nearest tenth of a year, when this investment grows to \$7,000 in value.

28. The cost in dollars, y , of producing x CD holders is given by the linear equation $y = 4x + 1000$. Find the number of CD holders that can be produced for \$100,000.

29. a) If a gambler rolls two die and gets a sum of 9, he wins \$2, and if he gets a sum of two, he wins \$10. The cost to play this game is \$1. What is the expectation of this game? Round to the nearest hundredth.

b) If a gambler rolls two die and gets a sum of 5, he wins \$15, and if he gets a sum of three, he wins \$40. The cost to play this game is \$10. What is the expectation of this game? Round to the nearest hundredth.

30. a) The rock-climbing club has 20 members. If the club wants to select a president, vice-president, secretary, historian, and treasurer (5 different people), in how many ways can this be done?

b) The research director at NASA must choose four experiments for the next space shuttle. If 12 experiments are proposed, in how many ways can this decision be made if order matters?

31. If a single card is drawn from a standard 52-card deck, find the probability that we select

A) A red non-face card

B) A heart or a Jack

32. If a coin is tossed four times, what is the probability of:

A) Getting exactly 4 Heads B) Getting exactly 3 Tails

33. If automobile license plates consist of two letters followed by six digits, how many different possible license plates are possible if letters and numbers may be repeated?

34. If automobile license plates consist of one letter followed by five digits, how many different possible license plates are possible if letters and numbers may be repeated?

