

## Math 1030 Final Review

### Topics to know

- Finding the negation of a statement
- Writing statements symbolically and in words
- Equivalent statements
- Determining whether an argument is valid
- Converting percents to decimal form and vice versa
- How to find  $e$ ,  $\pi$  on your calculator
- Finding the future value on an account with compound interest
- Calculating amount financed, total installment price, finance charge
- Finding costs associated with buying a home, such as down payment, points at closing, mortgage amount, monthly payments, interest
- Calculating the money earned from dividends
- Converting units of length, area, volume, temperature
- Population density
- Angle chasing
- Similar triangles
- Trigonometry
- Volume, area, perimeter
- Factorials (be able to show all details)
- Number of ways an event can occur, combinations, permutations
- Probability with and, or, not
- Odds
- Expected value
- Mean
- Creating frequency distributions, histograms
- Finding the equation of the best fit line
- Misleading graphs
- Normal distributions
- Percentiles
- Modeling real life situations using graph theory
- Determining whether there is an Euler path and if so, finding one.

### Definitions to match

- Bond, points at closing, mutual fund, down payment, stock, mortgage
- Square, parallelogram, rectangle, rhombus, trapezoid, quadrilateral
- Graph theory definitions

### Reminders

- Be careful to round correctly
- Label the units
- Show all work
- Your calculator must have a  $\pi$  key. You also need  $\sin$ ,  $\cos$ ,  $\tan$ , and  $\tan^{-1}$  (atan). Be sure your calculator is in degree mode (not radians). Bring your own calculator, as you may not share with another person during the test. You may not use your cell phone.
- No notes.
- You have 1 hour and 50 minutes to take the test.
- Please do not talk to anyone about the test who hasn't taken it yet, as there are two sections of this class.

## Information to memorize

- Conditional, converse, inverse, contrapositive
- Truth tables for and, or
- Percent formula:  $A = PB$
- Percent increase or decrease:
- How to read a stock table
- 1 yd = 3ft
- 1 m = 100 cm
- 1 kg = 1000g
- 1 cc = 1 cm<sup>3</sup> = 1 mL
- 1 gallon = 4 quarts
- 1 quart = 4 cups
- 1 kg = 2.2 lbs
- 1 ton = 2000 lbs
- 1 mi = 1.6 km
- Names of regular polygons
- Finding the supplement, complement of an angle
- Area of a rectangle =  $lw$
- Volume of a box =  $lwh$
- Area of a triangle =  $\frac{1}{2}bh$
- Area of a circle =  $\pi r^2$
- Circumference of a circle =  $2\pi r$
- Pythagorean Theorem (only for right triangles):  $a^2 + b^2 = c^2$
- $\text{probability of an event} = P(E) = \frac{n(E)}{n(S)} = \frac{\text{number of outcomes in the event}}{\text{number of total outcomes}}$
- Mean
- Voting methods

Information that will be provided

• **Standard arguments**

Direct $p \rightarrow q$ $\frac{p}{\therefore q}$	contrapositive $p \rightarrow q$ $\frac{\sim q}{\therefore \sim p}$	Disjunctive $p \vee q$ $\frac{\sim p}{\therefore q}$		$p \vee q$ $\frac{\sim q}{\therefore p}$
fallacy of the converse $p \rightarrow q$ $\frac{q}{\therefore p}$	fallacy of the inverse $p \rightarrow q$ $\frac{\sim p}{\therefore \sim q}$	misuse of the disjunctive $p \vee q$ $\frac{p}{\therefore \sim q}$		$p \vee q$ $\frac{q}{\therefore \sim p}$

- Future value using **compound interest**:  $A = P(1 + \frac{r}{n})^{nt}$
- **Vocabulary of Fixed Installation Loans**
  - Amount financed = Cash price – Down payment
  - Total installment price = Total of all monthly payments + Down payment
  - Finance charge = Total installment price – Cash price
- **Monthly Payment per \$1000 Mortgage Table**

Rate %	20 years	25 years	30 years
6.5	\$7.46	\$6.75	\$6.32
7	7.75	7.07	6.65
7.5	8.06	7.39	6.99
8	8.36	7.72	7.34

- $Population\ density = \frac{population}{area}$
- $F = \frac{9}{5}C + 32, \quad C = \frac{5}{9}(F - 32)$
- 1 yd = 0.9 m
- 1 gallon = 3.78 L
- Volume of a cylinder = (area of the top)(height)
- $\sin A = \frac{side\ opposite\ angle\ A}{hypotenuse}$
- $\cos A = \frac{side\ adjacent\ angle\ A}{hypotenuse}$
- $\tan A = \frac{side\ opposite\ angle\ A}{side\ adjacent\ angle\ A}$
- ${}_n P_r = \frac{n!}{(n-r)!}$
- ${}_n C_r = \frac{n!}{(n-r)!r!}$
- Permutations of duplicate items  $\frac{n!}{p!q!r!...}$
- $P(\text{not } E) = 1 - P(E)$
- $P(A \text{ or } B) = P(A) + P(B)$  if A and B are mutually exclusive
- $P(A \text{ or } B) = P(A) + P(B) - P(A \cap B)$  if A and B are not mutually exclusive
- $P(A \text{ and } B) = P(A)P(B)$  for independent events.
- $P(A \text{ and } B) = P(A)P(B, \text{ given that } A \text{ has occurred})$  for dependent events.

- Odds in favor of an event = # outcomes in the event : # outcomes not in the event

- Regression line  $y = mx + b$

$$m = \frac{n(\sum xy) - (\sum x)(\sum y)}{n(\sum x^2) - (\sum x)^2}$$

$$b = \frac{\sum y - m(\sum x)}{n}$$

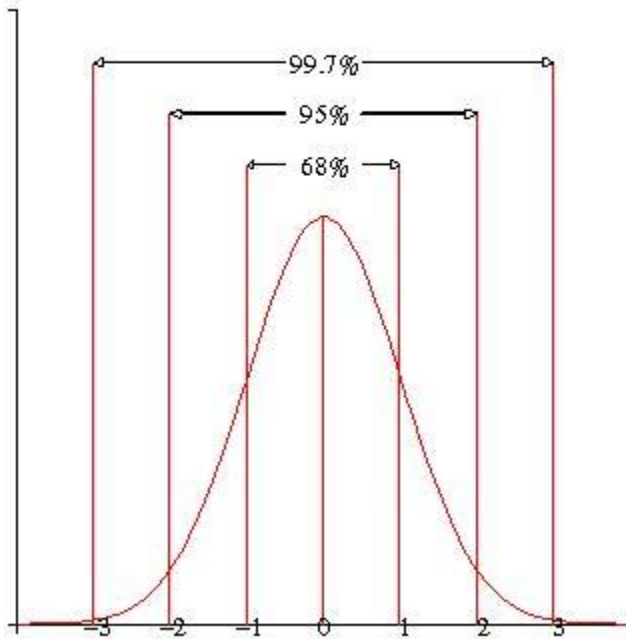
- 65-95-99.7 Rule

Approximately 68% of the data items fall within 1 standard deviation of the mean (in both directions).

Approximately 95% of the data items fall within 2 standard deviations of the mean.

Approximately 99.7% of the data items fall within 3 standard deviations of the mean.

68-95-99.7 Rule for the Normal Distribution



- Summary of Euler's Theorem

Number of Odd Vertices	Euler Paths	Euler Circuits
None	At least one	At least one
One	?	?
Two	At least one	None
More than two	None	None

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Final Extra Credit Review Part I (10 points, due Friday April 28 by 5pm)

- 3.1: 13,16,18,19,26,28,29,32,35
- 3.2: 10,11,21
- 3.3: 1,3,7,10,12
- 3.4: 9,12
- 3.5: 8,9,17,18,19,26,29,30,82,83
- 3.6: 29-32
- 8.1: 12,28,37,41,46,50,55,57,60,61,66,68
- 8.3: 6,31
- 8.4: 2,3
- 8.5: 1,2,12,13
- 8.6: 1,2,9,11,16,17
- 9.1: 9,12,17,24,31,36,46,47,68
- 9.2: 2,4,13,26,29,33
- 9.3: 3,8,9,24,27,32,41,50,69,79

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Final Extra Credit Review Part II (10 points, due when you take the final)

- 10.1: 11,14,16,19,26,31,38,39
- 10.2: 1,4,5,9,12,14,15,22,25,28-32
- 10.3: 2,4-8,10,14,15,17,19,20,24,34,37,38,41,44
- 10.4: 1,4,7,9,10,12,15,18,19,24,25,35
- 10.5: 2,3,9,12,23,34,42
- 10.6: 2,3,9,12,18,24-27,29,36
- 11.1: 17,19
- 11.2: 34,51,52(show details on all of these)
- 11.3: 16,30,35(show details on all of these)
- 11.4: 43,46,72
- 11.6: 2,16,23,48,59
- 11.7: 1,4,21,53-58
- 11.8: 3,8
- 12.1: 9,10,22,23,31,32
- 12.2: 3,8
- 12.4: 24,30,31
- 12.5: 38bc,39bc
- 14.1: 9,10,13,14,17,18,25,26
- 15.1: 11,14,19,34-36,39,40,44,47,48,53,55,57,59-63
- 15.2: 3,6,9,12,13,16,17,20,21,24,57,58

Schedule Reminder:

Date	Topic	Assignment Due
Monday, May 1	Help Session 10-12 same room as class	Study Day
Tuesday, May 2	Section 4 Final 11am-12:50pm in Sc 129	Final Extra Credit Review Part II Chapters 12&14 Test Correction Resubmits Note: You may not take the final at any other time than when your section is scheduled without instructor consent and payment of a fee to the cashier's.
Friday, May 5	Section 3 Final 9am-10:50am in Sc 129	Final Extra Credit Review Part II Chapters 12&14 Test Correction Resubmits Note: You may not take the final at any other time than when your section is scheduled without instructor consent and payment of a fee to the cashier's.