

Houston Community College
Finite Mathematics
Final Exam

Name: _____

Find the slope of the line passing through the given pair of points.

1) (1, 3) and (2, 5)

A) $\frac{1}{2}$

B) - 2

C) $\frac{8}{3}$

D) 2

Write an equation for the line.

2) Through (-1, 4), perpendicular to $8x + 1y = 7$

A) $y = 8x + 12$

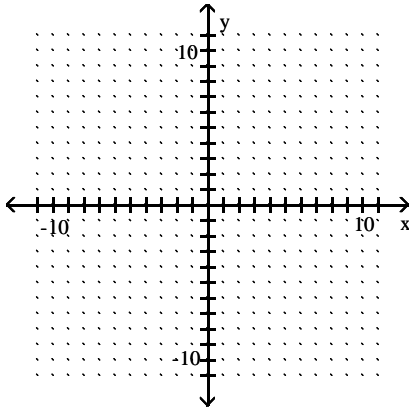
B) $y = -\frac{1}{8}x + \frac{31}{8}$

C) $y = -8x - 4$

D) $y = \frac{1}{8}x + \frac{33}{8}$

Graph the equation.

3) $y = -\frac{1}{2}x + 4$



Use the Gauss-Jordan method to solve the system of equations.

4) $x - y + z = -2$

$x + y + z = 0$

$x + y - z = 10$

A) (-5, 4, 1)

B) (4, -5, 1)

C) (4, 1, -5)

D) No solution

Perform the indicated operation.

5) $\begin{bmatrix} -1 & 4 \\ 0 & 4 \\ 9 & -4 \end{bmatrix} - \begin{bmatrix} 2 & 1 \\ 7 & 4 \\ 3 & 2 \end{bmatrix}$

A) $\begin{bmatrix} -3 & 3 \\ -7 & 0 \\ 6 & -6 \end{bmatrix}$

B) $\begin{bmatrix} 3 & -3 \\ 7 & 0 \\ -6 & 6 \end{bmatrix}$

C) $\begin{bmatrix} 1 & 3 \\ 7 & 0 \\ 6 & -2 \end{bmatrix}$

D) $\begin{bmatrix} 1 & 5 \\ 7 & 8 \\ 12 & -1 \end{bmatrix}$

Find the indicated matrix product, if possible.

6) $A = \begin{bmatrix} 0 & -2 \\ 4 & 3 \end{bmatrix}$, $B = \begin{bmatrix} -1 & 3 & 2 \\ 0 & -3 & 1 \end{bmatrix}$. Find AB .

A) $\begin{bmatrix} 0 & -4 & 6 \\ 3 & -2 & 11 \end{bmatrix}$

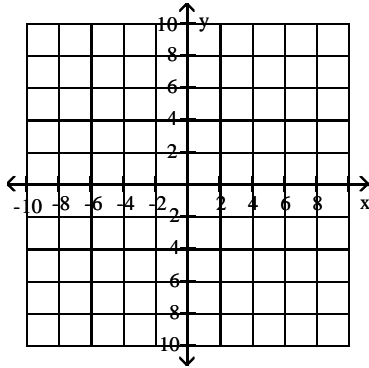
B) $\begin{bmatrix} 0 & 6 & -2 \\ -4 & 3 & 11 \end{bmatrix}$

C) $\begin{bmatrix} 0 & -6 & -8 \\ 0 & -9 & 3 \end{bmatrix}$

D) AB is not defined.

Graph the feasible region for the system of inequalities.

7) $6y - x \leq 8$
 $-y + 3x \leq 6$
 $x \leq 0$



Use the simplex method to solve the linear programming problem.

8) Maximize $z = 4x_1 + 2x_2$

subject to: $x_1 + 5x_2 \leq 14$

$2x_1 + 3x_2 \leq 12$

with $x_1 \geq 0, x_2 \geq 0$

A) Maximum is 12 when $x_1 = 6, x_2 = 0$

B) Maximum is 56 when $x_1 = 14, x_2 = 0$

C) Maximum is 24 when $x_1 = 6, x_2 = 0$

D) Maximum is 14.6 when $x_1 = 2.5, x_2 = 2.3$

A toy making company has at least 300 squares of felt, 700 oz of stuffing, and 230 ft of trim to make dogs and dinosaurs. A dog uses 1 square of felt, 4 oz of stuffing, and 1 ft of trim. A dinosaur uses 2 squares of felt, 3 oz of stuffing, and 1 ft of trim.

9) It costs the company \$1.37 to make each dog and \$1.81 for each dinosaur. The company wants to minimize its costs. What are the coefficients of the objective function?

A) 1, 4, 1

B) 2, 3, 1

C) 1.37, 1.81

D) 300, 700, 230

Solve the problem.

10) License plates are made using 3 letters followed by 2 digits. How many plates can be made if repetition of letters and digits is allowed?

A) 175,760 plates

B) 11,881,376 plates

C) 100,000 plates

D) 1,757,600 plates

Given a group of students: $G = \{\text{Allen, Brenda, Chad, Dorothy, Eric}\}$ or $G = \{A, B, C, D, E\}$, count the different ways of choosing the following officers or representatives for student congress. Assume that no one can hold more than one office.

- 11) A president, a secretary, and a treasurer, if the president must be a woman and the other two must be men
 A) 12 B) 3 C) 6 D) 4

Solve the problem.

- 12) If the police have 8 suspects, how many different ways can they select 5 for a lineup?
 A) 40 ways B) 6720 ways C) 336 ways D) 56 ways

A bag contains 6 cherry, 3 orange, and 2 lemon candies. You reach in and take 3 pieces of candy at random. Find the probability.

- 13) All cherry
 A) .1212 B) .7272 C) .1091 D) .3636

- 14) All lemon
 A) .1212 B) .061 C) 0 D) 1

Solve the problem. Express the answer as a percentage.

- 15) 68% of the workers at Motor Works are female, while 69% of the workers at City Bank are female. If one of these companies is selected at random (assume a 50–50 chance for each), and then a worker is selected at random, what is the probability that the worker will be female?
 A) 68% B) 68.5% C) 69% D) 1%

Find the probability of the event.

- 16) The probability that a radish seed will germinate is .7. The gardener plants 20 seeds and she harvests 16 radishes.
 A) .075 B) .068 C) .130 D) .571

Solve the problem.

- 17) Suppose you buy 1 ticket for \$1 out of a lottery of 1000 tickets where the prize for the one winning ticket is to be \$500. What are your expected winnings?
 A) \$0 B) -\$.40 C) -\$1.00 D) -\$.50

Prepare a probability distribution for the experiment. Let x represent the random variable, and let P represent the probability.

- 18) A field goal kicker has a kicking average of .75 and he tries 3 field goals in a game. The number of field goals is counted.

A)

x	P
0	.016
1	.140
2	.522
3	.322

B)

x	P
0	.016
1	.141
2	.422
3	.422

C)

x	P
0	.522
1	.141
2	.322
3	.016

D)

x	P
0	.422
1	.141
2	.016
3	.422

Find the mean for the list of numbers.

19) 12, 42, 75, 52, 129, 64 (Round to the nearest tenth)

- A) 61.8 B) 62.3 C) 62.8 D) 74.8

Find the median.

20) 4, 2, 23, 20, 28, 46, 32, 32

- A) 23.5 B) 28 C) 25.5 D) 23

Find the mode or modes.

21) 87, 54, 32, 54, 29, 87

- A) 57.2 B) 87 C) 54 D) 87, 54

Find the range for the set of data numbers.

22) 112, 539, 228, 662, 345, 292

- A) 112 B) 539 C) 550 D) 64

Find a z-score satisfying the given condition.

23) 74.9% of the total area is to the left of z.

- A) .68 B) .66 C) -.67 D) .67

Find the percent of the total area under a normal curve that is contained within the specified interval.

24) Find the percent of the area between $z = -2.49$ and $z = 1.19$.

- A) 86.8% B) 87.7% C) 11.3% D) 11.1%

Assume the distribution is normal. Use the area of the normal curve to answer the question. Round to the nearest whole percent.

25) The average runner at a local college runs the mile in 4.5 minutes, with a standard deviation of .3 minutes. What is the probability that a person will run a mile in less than 4 minutes?

- A) 3% B) 4% C) 5% D) 7%

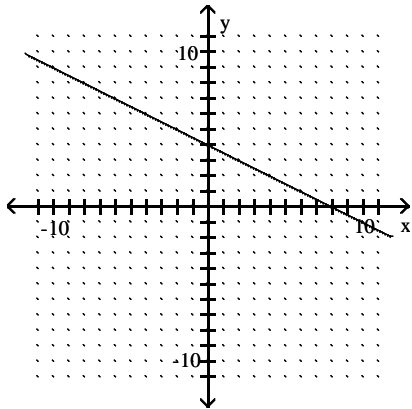
Answer Key

Testname: M1324 REVIEW FOR FINAL

1) D

2) D

3)

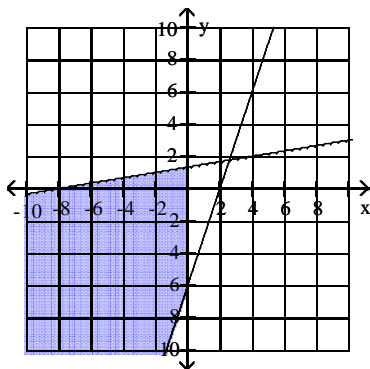


4) C

5) A

6) B

7)



8) C

9) C

10) D

11) A

12) D

13) A

14) C

15) B

16) C

17) D

18) B

19) B

20) C

21) D

22) C

23) D

24) B

25) C