Mathematics Department
New York City Technical College
City University of New York

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KASE
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REVIEW SHEET – MAT 1280

1. Use the Echelon Method to solve:

$$x + 3y + 2z = 1$$
$$2x + y - z = 2$$
$$x + y + z = 2$$

2. Use the Gauss Jordan Method to solve:

$$x + 5z = -6 + y$$
$$3x + 3y = 10 + z$$
$$x + 3y + 2z = 5$$

3. Solve the Matrix Equation $Ax = B$ for x:

$$A = \begin{bmatrix} -2 & 4 \\ 3 & -1 \end{bmatrix} \qquad B = \begin{bmatrix} 40 & -20 \\ 80 & 20 \end{bmatrix}$$

4. Find the MAX. & MIN. of the objective function: $z = 5x + 2y$

$$3y - 2x \geq 0$$
$$y + 8x \leq 52$$
$$y - 2x \leq 2$$
$$x \geq 3$$

5. Find the present value:

$$A = \$32{,}000$$
$$t = 4mos$$
$$r = 9\%$$

6. Find the future value:

$900 is deposited at 8% compounded semiannually for 8 years.

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7. Find the future value of the annuity. Mike deposits $200 at the end of each month in an account that pays interest at 7.2% compounded monthly for 20 years.

8. If $A=\{a,b,c,d,e,f,g\}$, $B=\{e,f,g,h\}$, $C=\{f,g\}$, find
$A\cup(B\cap C)$
$B\cap(A\cup C)$
$C\cup(A\cap B)$.

9. A jar contains 5 red, 4 black, 7 purple and 9 green marbles. If a marble is drown at random, find
P(red)
P(green)
P(black).

10. There are 25 people in a room, 10 are Democrats and 15 are Republicans, find
(a) P(all 4 are Democrats)
(b) P(all 4 are Republicans)
(c) P(2 Democrats, 2 Republicans)
(d) P(1 Democrats, 3 Republicans).

11. Find the mean:
86, 103, 118, 117, 126, 158, 149

12. Find the median:
6, 99, 15, 21

13. Find the mode:
1,1, 2, 3, 3,4

14. Find standard deviation of the following numbers (nearest tenth).
7, 6, 12, 14, 18, and 15

15. A 6 E light bulb has an average life of 1200 hours with a standard deviation of 50 hours. Find the probability that the life of one of these bulbs will be between 1150 and 1300 hours. (Assume the distribution is normal)

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ANSWERS:

1. $x = 2, y = -1, z = 1$
2. $x = 1, y = 2, z = -1$
3. $x = \begin{bmatrix} 36 & 6 \\ 28 & -2 \end{bmatrix}$
4. Min 19 at (3,2), Max 49 at (5, 12)
5. $ 31,067.96
6. A=$1685.68
7. $106,752.47
8. {a, b, c, d, e, f, g},
   {e,f,g},
   {e,f,g}
9. $\frac{5}{25}, \frac{9}{25}, \frac{4}{25}$
10. a) 0.0166
    b) 0.1079
    c) 0.3735
    d) 0.3597
11. 122.43
12. 18
13. 1 and 3
14. 4.7
15. 0.8186