

1. B  
last row means one of the equations was extra information.

2. D  
Time start with zero in 2000. Here is the information that should be typed into the calculator.

x	2	3	5	7
y	3	7	8	16

3. A  
Break even is when profit is equal to zero. solving for this gives  $x = 22$ . The **break even point** is where the cost and profit functions intersect. Plug the  $x$ -value into the cost function to get the  $y$ -value of the point.

4. A  
The points are  $(5, 300)$  and  $(15, 700)$

5. E  
Solving  $JX = K$  for the matrix  $X$  give  $X = J^{-1}K$ . Now compute  $J^{-1}K$  using the calculator.

6. B

7. D

8. B

Solve the system using rref and you get  $x = 3.6$  and  $y = 88$

9. C

10. D

Note:  $x$  is measured in hundreds of items and the question is asking for the number of items. i.e. multiple by 100 to get the number of items.

11. A

$K$  is not a square matrix, so the inverse is not possible.

12. C

The solution for the system of equations is  $x = 0$ ,  $y = 1$ , and  $z = -5$ . While these are three numbers they are one solution to the system of equations.

13. A

The points for the supply function are  $(300, 180)$  and  $(50, 100)$ . The other points in the problem are for the demand equation.

14. C

15. D

16. This problem was omitted. After simplifying, you end up with the following.

$$\begin{bmatrix} A-2 & -6 \\ -2 & 3-2y \\ 5-2z & -8 \end{bmatrix} = \begin{bmatrix} 12 & 8 \\ 0 & 28 \\ 24 & 12 \end{bmatrix}$$

notice that the element in row 1 column 1 of both matrices are not equal so that is not any way to solve for the variable since the matrices are not equal.

17. D

The last row indicates that there is no solution. Also saying no solution means that there is no solution for all of the variables.

18. B

19. A

be sure to line up the variables in these equations and then use rref.

20. B

21. C

22. E

note  $40 \leq z \leq 165$  is all numbers in this interval. since we are talking about apartments, we only want the integers.