

NAME: \_\_\_\_\_

Maximum Time: 15 minutes

Maximum Marks: 30 pts.

1. [1 pt.] Consider the line  $Y = X - 3$ , does the point  $(0, 3)$  lies on the line. [Yes / No]
  2. [2 pts.] Consider the line  $Y = 2 * X + 7$ , slope of the line is \_\_\_\_\_ and y-intercept is \_\_\_\_\_.
  3. [2 pts.] Consider the line  $Y = 2 * X + 7$ , x-intercept of the line is \_\_\_\_\_.
  4. [2 pts.] Consider the line  $Y = 3 * X - 5$ , a point (\_\_\_\_\_, \_\_\_\_\_) lies on this line.
  5. [3 pts.] Consider two lines  $L_1$  and  $L_2$  represented by equations  $Y = 2X + 4$  and  $Y = X + 2$  respectively. The point of intersection of these two lines is (\_\_\_\_\_, \_\_\_\_\_).
  6. [3 pts.] Consider a point  $P_1 (2, 5)$ . The equation of the line which pass through points  $P_1$  and has slope -2 is \_\_\_\_\_.
  7. [3 pts.] Consider two points  $P_1 (2, 5)$  and  $P_2 (1, 3)$ . The equation of the line which pass through points  $P_1$  and  $P_2$  is \_\_\_\_\_.
  8. [2 pts.] Derivative of y in equation  $y = 3x^2 - 5x + 2$  with respect to x is \_\_\_\_\_
  9. [2 pts.] Partial derivatives of z in equation  $z = 5x^3 - 3y^2 - 11$  with respect to x and y would be \_\_\_\_\_ and \_\_\_\_\_
  10. [2 pts.] Partial derivatives of z in equation  $z = 5x^3 * 3y^2 - 2x^2 + 5y^3 + 9$  with respect to x and y would be \_\_\_\_\_ and \_\_\_\_\_
  11. [2 pts.] In matrix algebra for two matrix A and B which qualify for multiplication, the expression  $(A \times B)^T = A^T \times B^T$  where  $A^T$  is transpose of the matrix A is [ True / False ]
  12. [2 pts.] In matrix calculus for matrix  $\tilde{X}$  and vector  $\vec{\tilde{w}}$ , the following partial derivative will result into  $\frac{\partial}{\partial \vec{\tilde{w}}} \tilde{X} \vec{\tilde{w}} =$  \_\_\_\_\_
  13. [2 pts.] In matrix calculus for matrix  $\tilde{X}$ , vector  $\vec{\tilde{w}}$  and transpose of  $\vec{\tilde{w}}$  represented as  $\vec{\tilde{w}}'$ , the following partial derivative will result into  $\frac{\partial}{\partial \vec{\tilde{w}}} \vec{\tilde{w}}' \tilde{X} =$  \_\_\_\_\_
  14. [2 pts.] In matrix calculus for matrix  $\tilde{X}$ , vector  $\vec{\tilde{w}}$  and transpose of  $\vec{\tilde{w}}$  represented as  $\vec{\tilde{w}}'$ , the following partial derivative will result into  $\frac{\partial}{\partial \vec{\tilde{w}}} \vec{\tilde{w}}' \tilde{X} \vec{\tilde{w}} =$  \_\_\_\_\_
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