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 _____2_____ and y-intercept is_____7_____.
3. [2 pts.] Consider the line Y = 2 * X + 7, x-intercept of the line is _____-7/2_____.
4. [2 pts.] Consider the line Y = 3 * X – 5, a point (___0___, ___-5___) lies on this line.
5. [3 pts.] Consider two lines L_1 and L_2 represented by equations Y = 2 X + 4 and Y = X + 2 respectively. The point of intersection of these two lines is (__-2____, ___0___).
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 ____y = -2 x + 9_____.
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 ____y = 2 x + 1_____.
8. [2 pts.] Derivative of y in equation $y = 3x^2 – 5x + 2$ with respect to x is ____6 x – 5 _____
9. [2 pts.] Partial derivatives of z in equation $z = 5x^3 – 3y^2 – 11$ with respect to x and y would be ___$15x^2$____ and _____- 6 y_____
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 _____$45x^2y^2 – 4x$_____ and _____$30x^3y + 15y^2$_____
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 $\vec{\hat{w}}$, the following partial derivative will result into $\frac{\partial}{\partial \vec{\hat{w}}} \tilde{X} \vec{\hat{w}} =$_____$\tilde{X}'$_____
13. [2 pts.] In matrix calculus for matrix $\tilde{X}$, vector $\vec{\hat{w}}$ and transpose of $\vec{\hat{w}}$ represented as $\vec{\hat{w}}'$, the following partial derivative will result into $\frac{\partial}{\partial \vec{\hat{w}}} \vec{\hat{w}}' \tilde{X} =$_____$\tilde{X}$_____
14. [2 pts.] In matrix calculus for matrix $\tilde{X}$, vector $\vec{\hat{w}}$ and transpose of $\vec{\hat{w}}$ represented as $\vec{\hat{w}}'$, the following partial derivative will result into $\frac{\partial}{\partial \vec{\hat{w}}} \vec{\hat{w}}' \tilde{X} \vec{\hat{w}} =$_____$\tilde{X} \vec{\hat{w}} + \tilde{X}' \vec{\hat{w}}$_____