

$$1) A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

Find A^{-1} . Show your work.

$$2) A = \begin{bmatrix} 3 & 1 & 2 \\ 5 & 6 & 4 \\ 9 & 7 & 8 \end{bmatrix}$$

Find A^{-1} . Show your work.

$$3) y = (x^2 - 4)^2(5 - 3x). \text{ Find } dy/dx \text{ when } x=3.$$

$$4) Q = (50B)/(A^2) \text{ Find } \frac{\partial Q}{\partial A} + \frac{\partial Q}{\partial B} \text{ when } A=2, B=3$$

$$5) \text{ Given the market model: } Q = a - bP \text{ (demand)}$$

$$Q = -c + dP \text{ (supply)}$$

where the parameters $a, b, c, d > 0$ a) Solve the model for equilibrium Q, Q^* , by substitutionb) Does the solution Q^* suggest any restrictions on the parameters for the model to be economically appropriate?

c) Solve the model again, this time using Cramer's Rule. Show your work.

$$d) \text{ Find } \frac{\partial Q^*}{\partial a}, \frac{\partial Q^*}{\partial b}, \frac{\partial Q^*}{\partial c}, \text{ and } \frac{\partial Q^*}{\partial d}$$

e) Indicate whether each of these partial derivatives is positive, negative, or zero.

f) Graph the model (demand and supply curves), putting "P" on the vertical axis and "Q" on the horizontal axis. Show the horizontal and vertical intercepts.

g) Assume $0 < b < 1$. Show the effect on the graph of an increase in the parameter "a". Make sure that your graph clearly shows the effect of the assumption $0 < b < 1$.