

Review Questions for the Math Quiz

1. Graphically illustrate all the points (x, y) that satisfy the following linear inequalities:

(a) $x - 3y \geq 9$

(b) $10x + 6y \leq 2$

2. Solve the following system of simultaneous equations for both x and y :

$$2x + y = 24$$

$$5y - x = 10$$

3. Graphically illustrate the following function: $f(x) = \text{Min}\{1, 3, x\}$

4. Does $\frac{(4y)^2(x+1)^4(x-1)}{4y^2(x+1)(x^2-1)}$ simplify to $(2x + 2)^2$? Show why or why not.

5. Differentiate the following functions with respect to x :

(a) $f(x) = (5x^3 - 3x - 13)^5$

(b) $f(x) = \frac{1}{x^2}$

6. Given $f(x, y) = 4x^3y^2 + xy + 2x + y + 10$, solve for the partial derivative of $f(x, y)$ with respect to x (i.e. $\frac{\partial f(x,y)}{\partial x}$); and solve for the partial derivative of $f(x, y)$ with respect to y (i.e. $\frac{\partial f(x,y)}{\partial y}$).