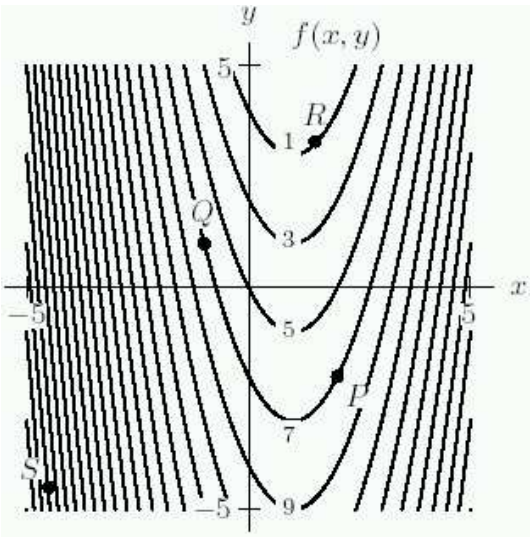
Classroom Voting Questions: Multivariable Calculus

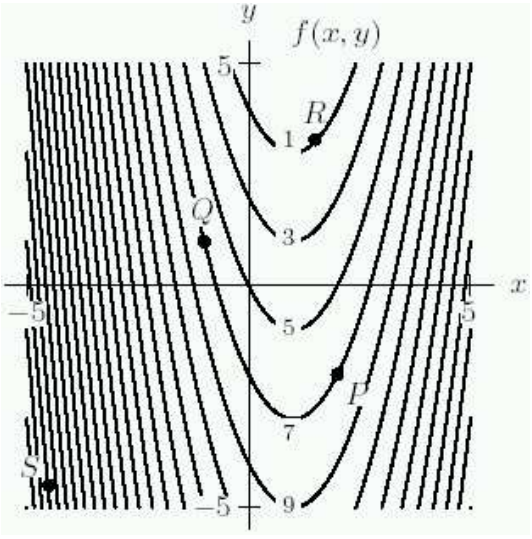
14.1 The Partial Derivative

1. At point Q in the diagram below, which of the following is true?



(a) $f_x > 0, f_y > 0$
(b) $f_x > 0, f_y < 0$
(c) $f_x < 0, f_y > 0$
(d) $f_x < 0, f_y < 0$

2. List the points P, Q, R in order of decreasing f_x.



(a) $P > Q > R$

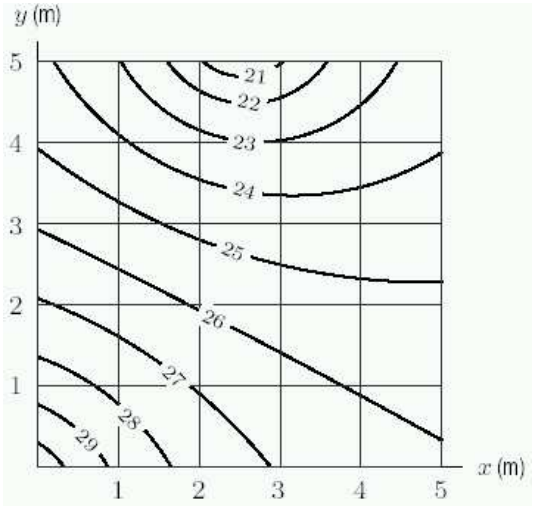
(b) $P > R > Q$

(c) $R > P > Q$

(d) $R > Q > P$

(e) $Q > R > P$

3. Using the level curves of $f(x, y)$ given in the figure below, which is larger, $f_x(2, 1)$ or $f_y(1, 2)$.



(a) $f_x(2, 1) > f_y(1, 2)$.

(b) $f_x(2, 1) < f_y(1, 2)$.

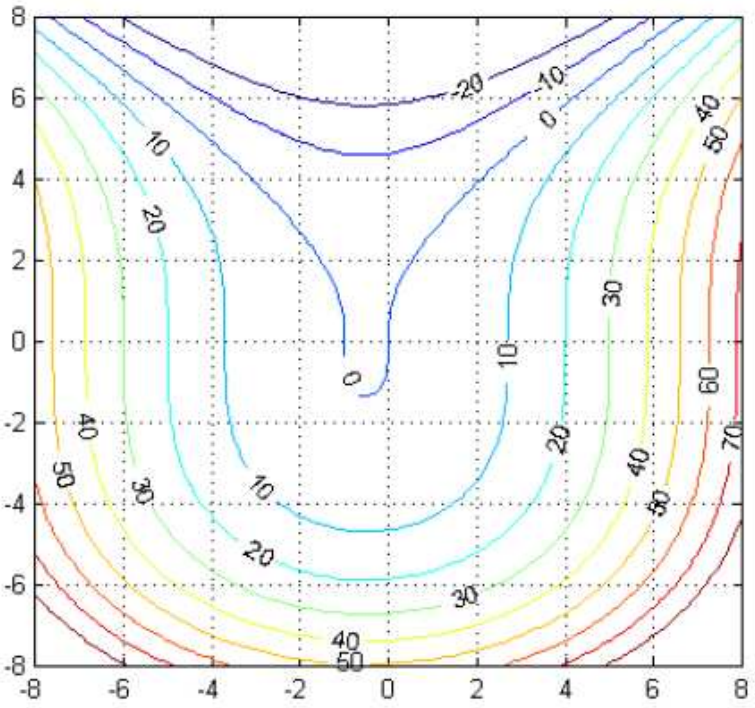
4. Suppose that the price P (in dollars), to purchase a used car is a function of C, its original cost (also in dollars), and its age A (in years). So $P = f(C, A)$. The sign of $\frac{\partial P}{\partial C}$ is

(a) Positive

(b) Negative

(c) Zero

5. Using the contour plot of $f(x, y)$, which of the following is true at the point (4,2)?



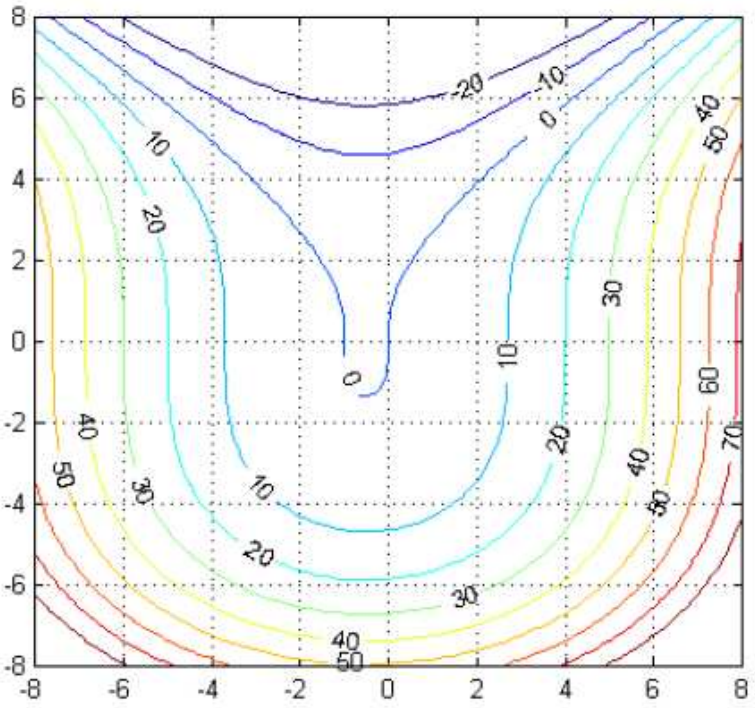
(a) $f_x > 0$ and $f_y > 0$

(b) $f_x > 0$ and $f_y < 0$

(c) $f_x < 0$ and $f_y > 0$

(d) $f_x < 0$ and $f_y < 0$

6. Using the contour plot of $f(x, y)$, which of the following is closest to the partial derivative of f with respect to x at (4,2)?



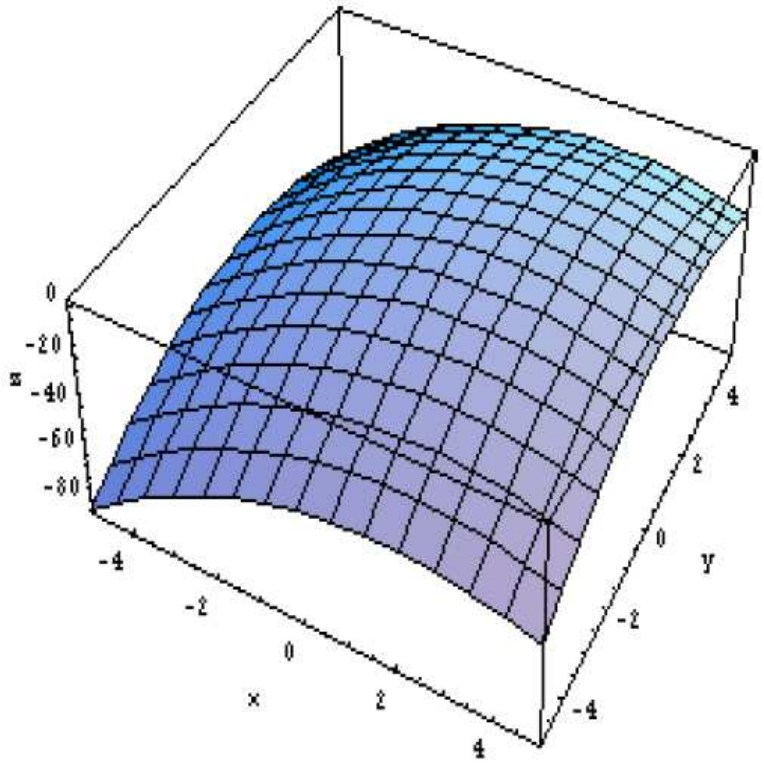
(a) 40

(b) 20

(c) 10

(d) 4

7. At which point above the xy plane will both partial derivatives be positive?



(a) (-5,-5)

(b) (5,-5)

(c) (5,5)

(d) (-5,5)