Calculus

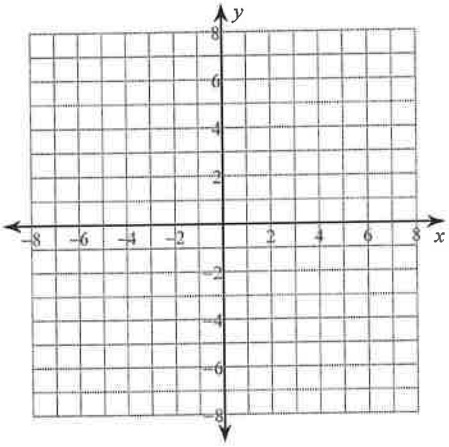
Name_____

Rolle's Theorem and Mean Value Theorem

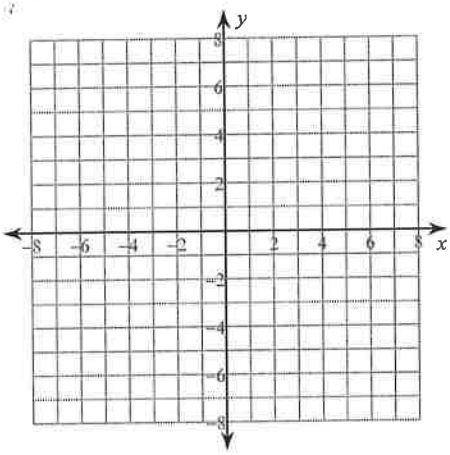
Date_____

For each problem, find the values of c that satisfy Rolle's Theorem. You may use the provided graph to sketch the function.

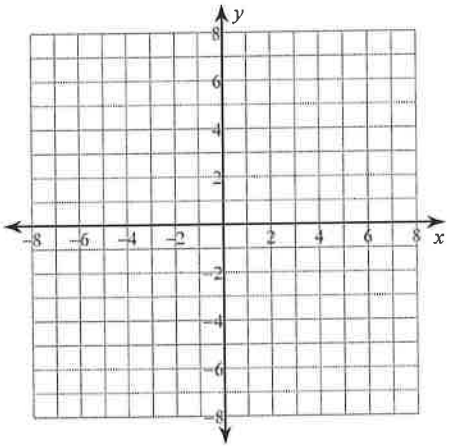
1) $y = x^2 - 6x + 9;\ \ [1, 5]$



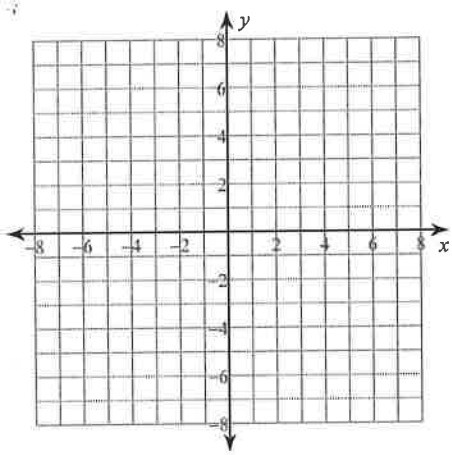
2) $y = x^2 + 8x + 13;\ \ [-7, -1]$



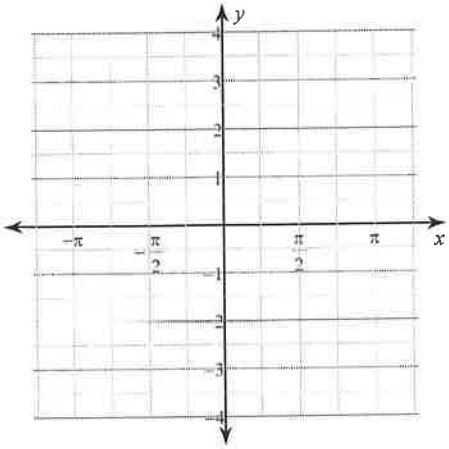
3) $y = -x^3 + 2x^2 + x - 4;\ \ [-1, 2]$



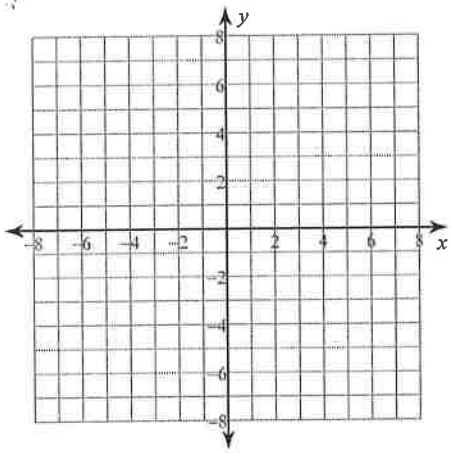
4) $y = -x^3 + 3x^2 + x - 2;\ \ [-1, 3]$



5) $y = -2\cos(x);\ \ [-\pi, \pi]$

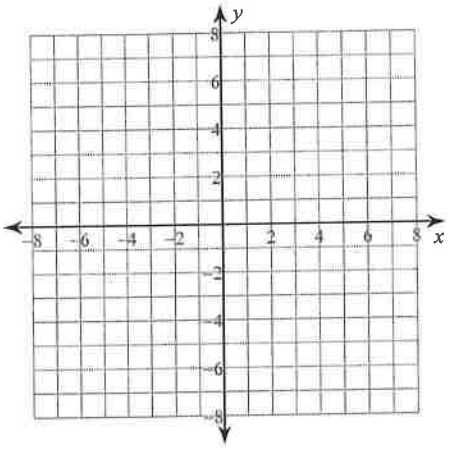


6) $y = x^3 - 4x^2 - x + 6;\ \ [-1, 4]$

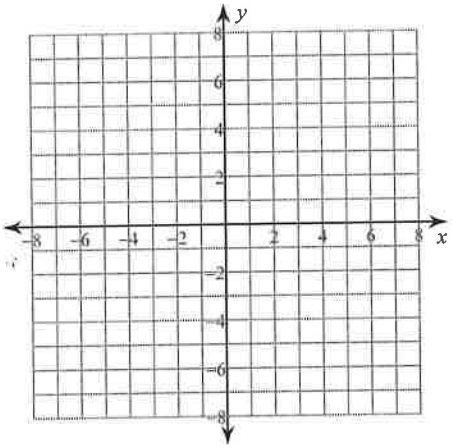


For each problem, find the values of c that satisfy the Mean Value Theorem. You may use the provided graph to sketch the function.

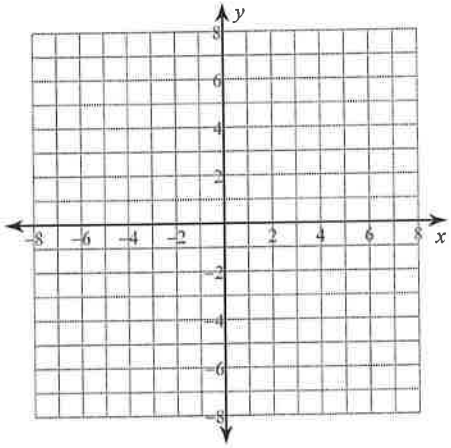
7) $y = 2x^2 + 16x + 32;\quad [-5, -3]$



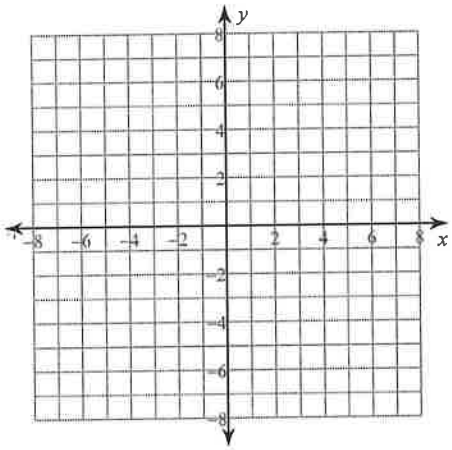
8) $y = \dfrac{x^2}{2} + 3x + \dfrac{7}{2};\quad [-5, -1]$



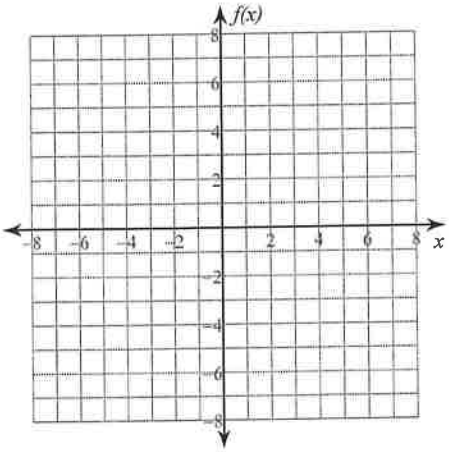
9) $y = -x^3 + 3x^2 + 1;\quad [0, 3]$



10) $y = -x^3 + x^2 + 4;\quad [-1, 1]$



11) $f(x) = x^3 - 2x^2 - 4;\quad [1, 3]$



12) $f(x) = -x^3 + 5x^2 - 7x + 1;\quad [1, 3]$