Практикум 9

$$y = \frac{1}{4}x^4 - \frac{2}{3}x^3 - \frac{3}{2}x^2 + 2, \quad x \in [-2, 4]$$

1) $y(-2) = \frac{1}{4} \cdot 16 + \frac{2}{3} \cdot 8 - \frac{3}{2} \cdot 4 + 2 = \frac{16}{3}$

$y(4) = \frac{1}{4} \cdot 256 - \frac{2}{3} \cdot 64 - \frac{3}{2} \cdot 16 + 2 = -\frac{2}{3}$

2) $y' = \frac{1}{4} \cdot 4x^3 - \frac{2}{3} \cdot 3x^2 - \frac{3}{2} \cdot 2x =$

$= x^3 - 2x^2 - 3x = x(x^2 - 2x - 3) = 0$

$x_1 = 0$ $\qquad x^2 - 2x - 3 = 0$

$\qquad\qquad D = 4 + 12 = 16$

$\qquad x_{2,3} = \frac{2 \pm 4}{2} = \begin{cases} x_2 = 3 \\ x_3 = -1 \end{cases}$

$y(0) = 2$

$y(3) = \frac{1}{4} \cdot 81 - \frac{2}{3} \cdot 27 - \frac{3}{2} \cdot 9 + 2 = -\frac{37}{4}$

$y(-1) = \frac{1}{4} + \frac{2}{3} - \frac{3}{2} + 2 = \frac{17}{12}$

Наименьшее знач: $y = \frac{16}{3}$

Наибольшее знач: $y = -\frac{37}{4}$