**5.** A twice-differentiable function $f$ on $(-\infty, \infty)$ satisfies the following conditions:

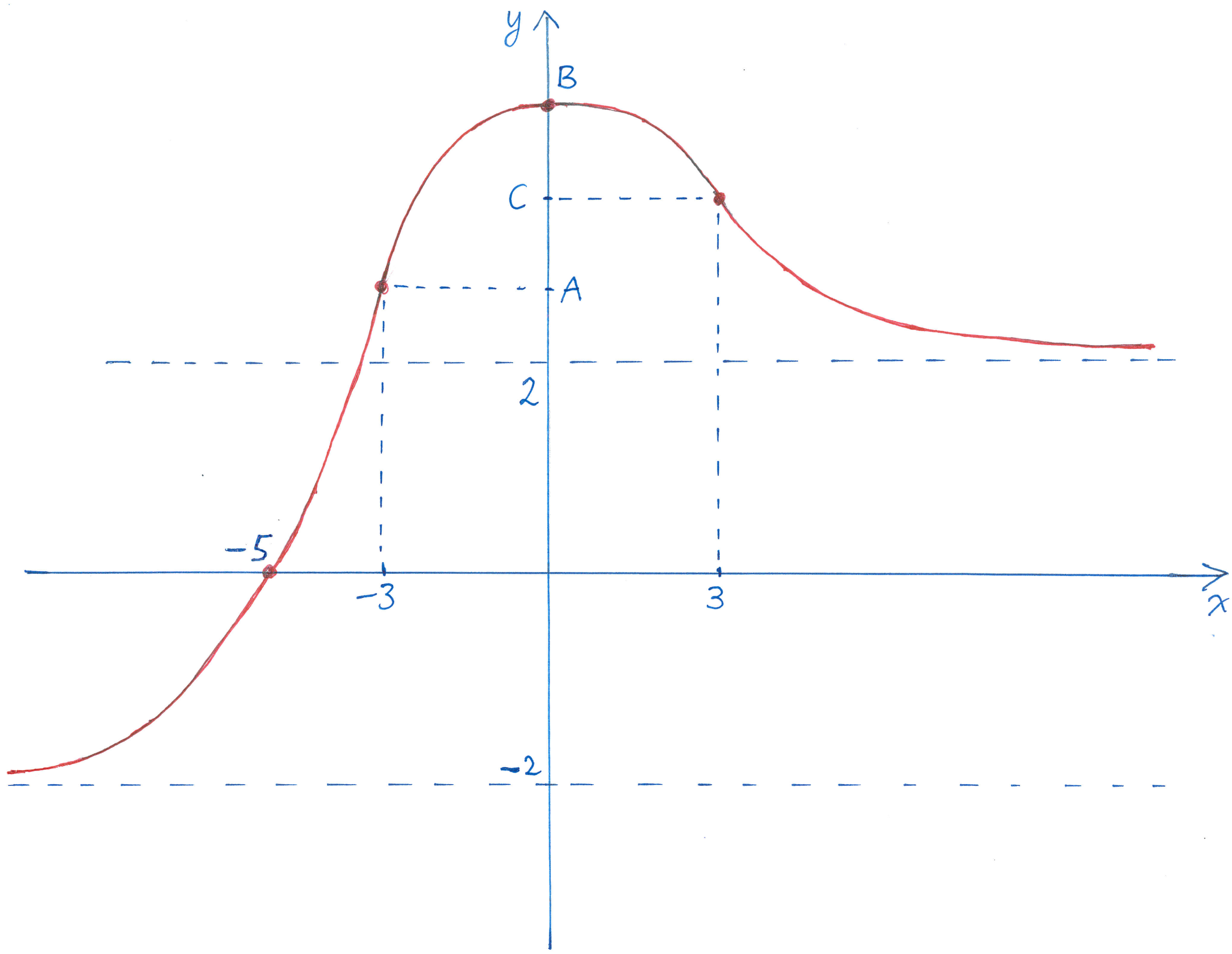
① $f(-5) = 0$, $f(-3) = A$, $f(0) = B$, $f(3) = C$, where $A$, $B$, $C$ are real numbers such that $2 < A < C$

② $\lim_{x\to-\infty} f(x) = -2$, $\lim_{x\to\infty} f(x) = 2$

③ $f'(x) > 0$ for $x < 0$, $f'(x) < 0$ for $x > 0$

④ $f''(0) = 0$, $f''(x) > 0$ for $x < -3$ and for $x > 3$, $f''(x) < 0$ for $-3 < x < 0$ and for $0 < x < 3$

**a.** Sketch the graph of $y = f(x)$ making sure that all important features are clearly shown.




**b.** Fill in the boxes to make the following a true statement. No explanation is required.

The function $f(x) = \dfrac{ax^3 + b}{|x|^3 + c}$ satisfies the conditions ①-④ if $a$, $b$ and $c$ are chosen as

$a = \boxed{2}$, $b = \boxed{250}$ and $c = \boxed{54}$.