(I)Graphs of the Form $y = [f(x)]^n$ where n>1 and an integer
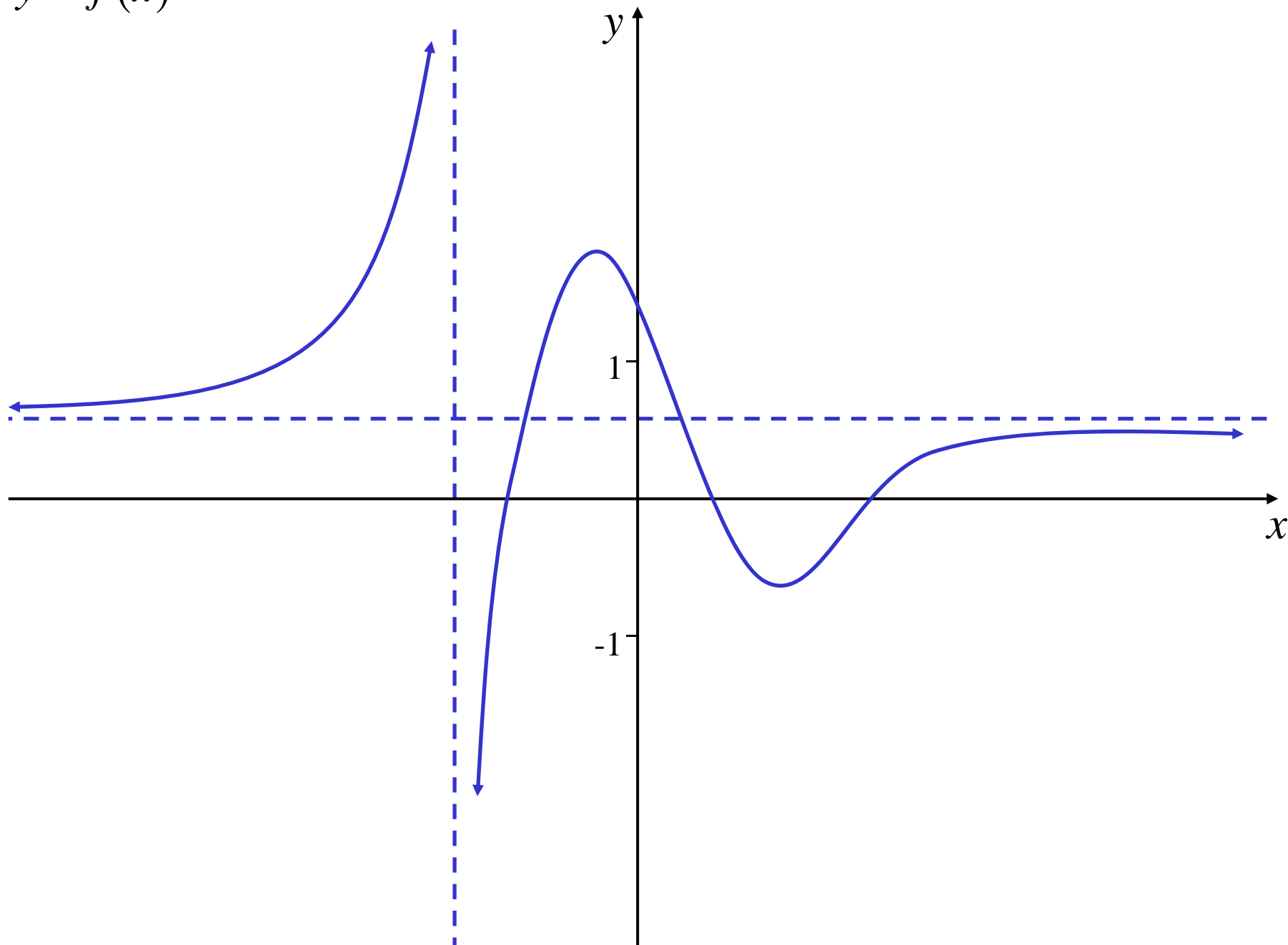
The graph of $y = [f(x)]^n$ can be sketched by first drawing $y = f(x)$

and noticing;

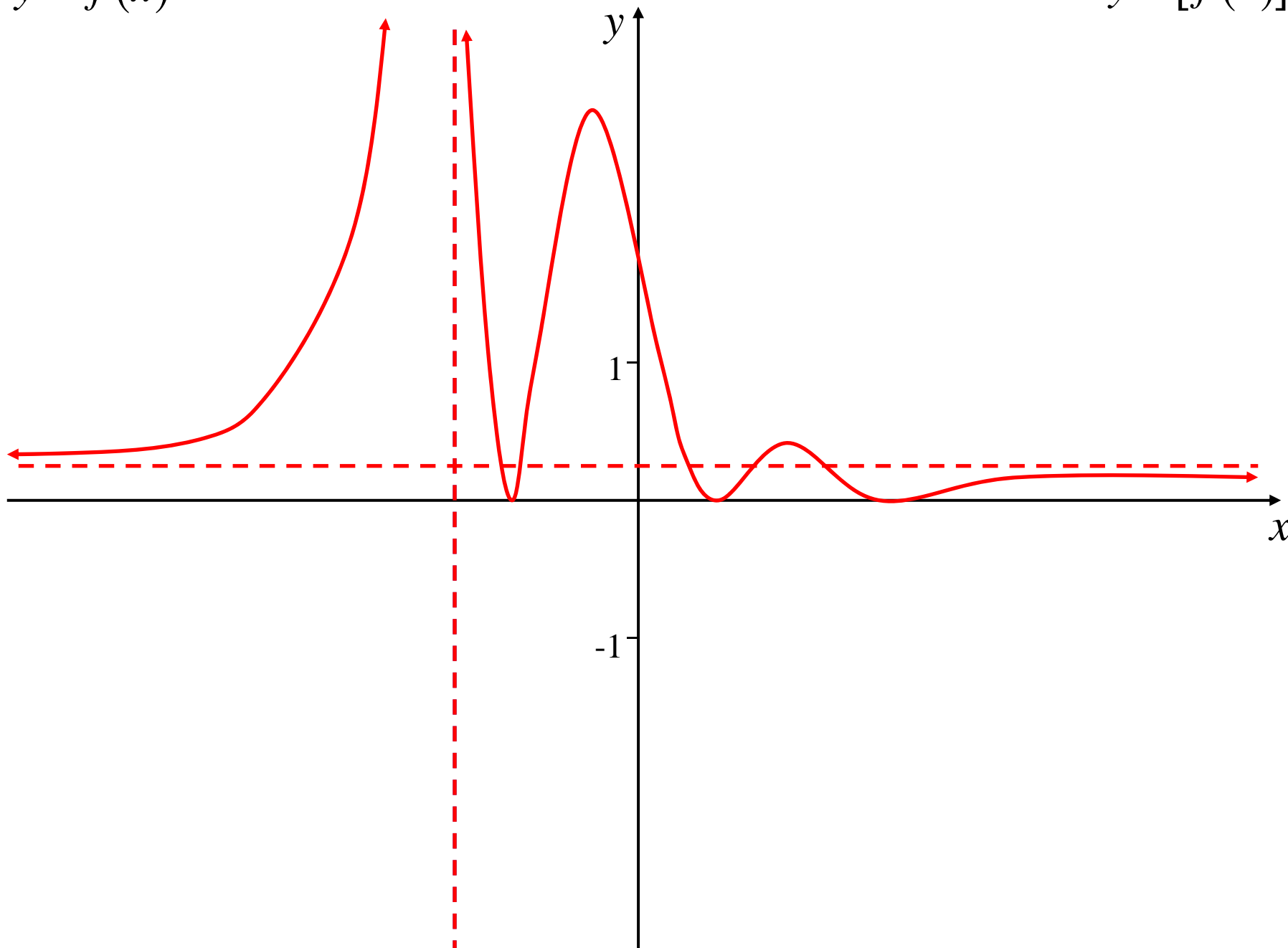- $\dfrac{dy}{dx} = n[f(x)]^{n-1} \times f'(x)$

- all stationary points must still be stationary points

- all points where the curve cuts the x axis are also stationary points

- if $|f(x)| > 1$ then $\left|[f(x)]^n\right| > f(x)$

- if $|f(x)| < 1$ then $\left|[f(x)]^n\right| < f(x)$

- if n is even then $[f(x)]^n \geq 0$

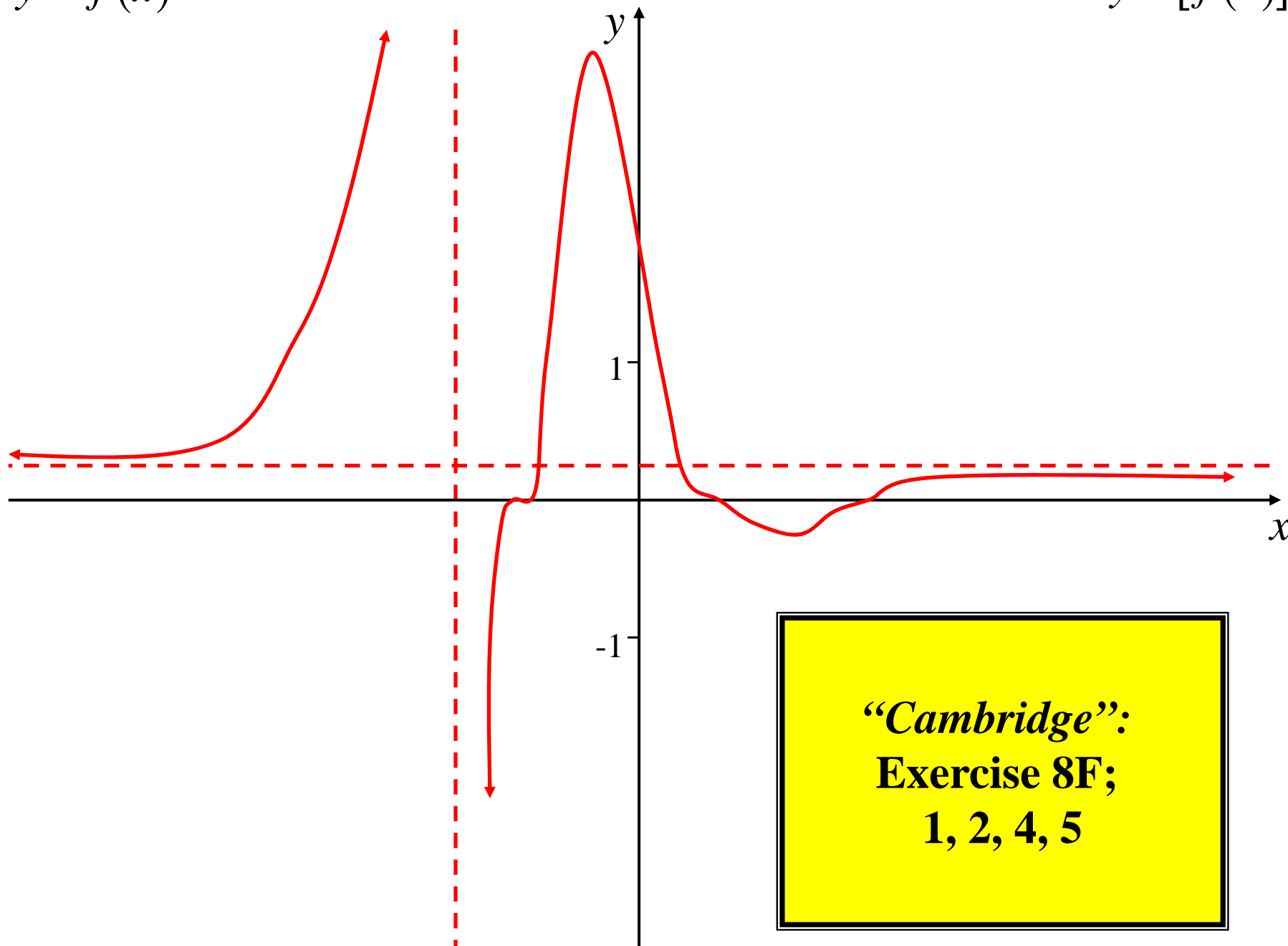- if n is odd then $[f(x)]^n$ is the same sign of $f(x)$ for any given value of x

$y = f(x)$

$y = f(x)$

$y = \left[f(x)\right]^2$

$y = f(x)$

$y = [f(x)]^3$

"Cambridge":
Exercise 8F;
1, 2, 4, 5