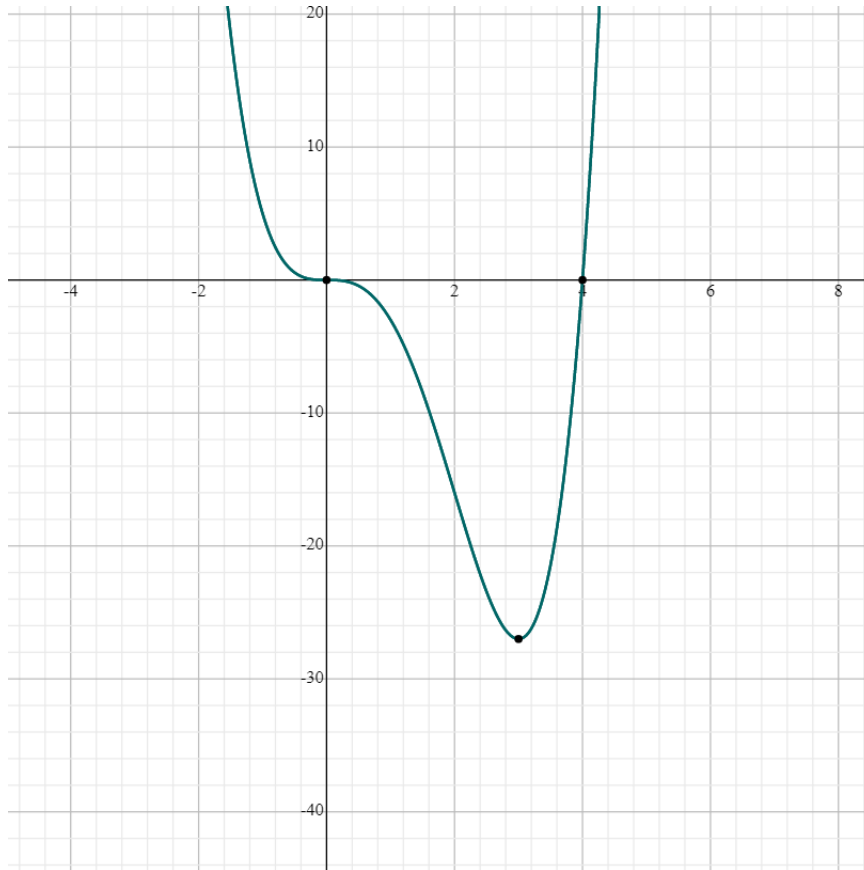


### The Area Between Curves

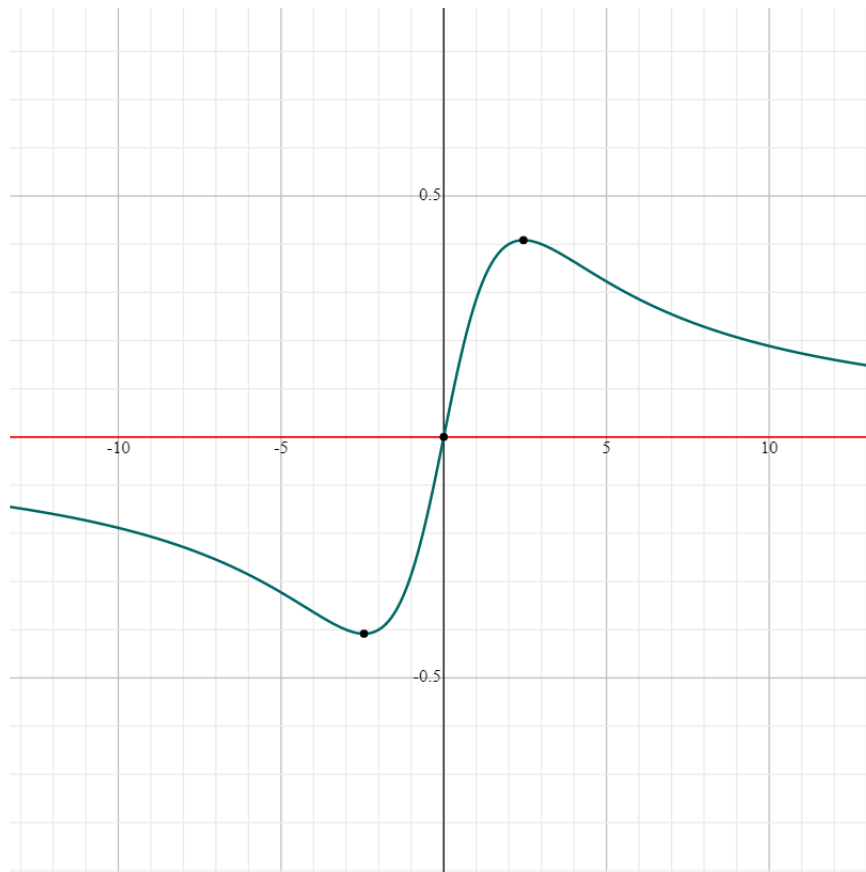
1. Find the area bounded by the given curve and the  $x$ -axis.

$$y = x^4 - 4x^3$$



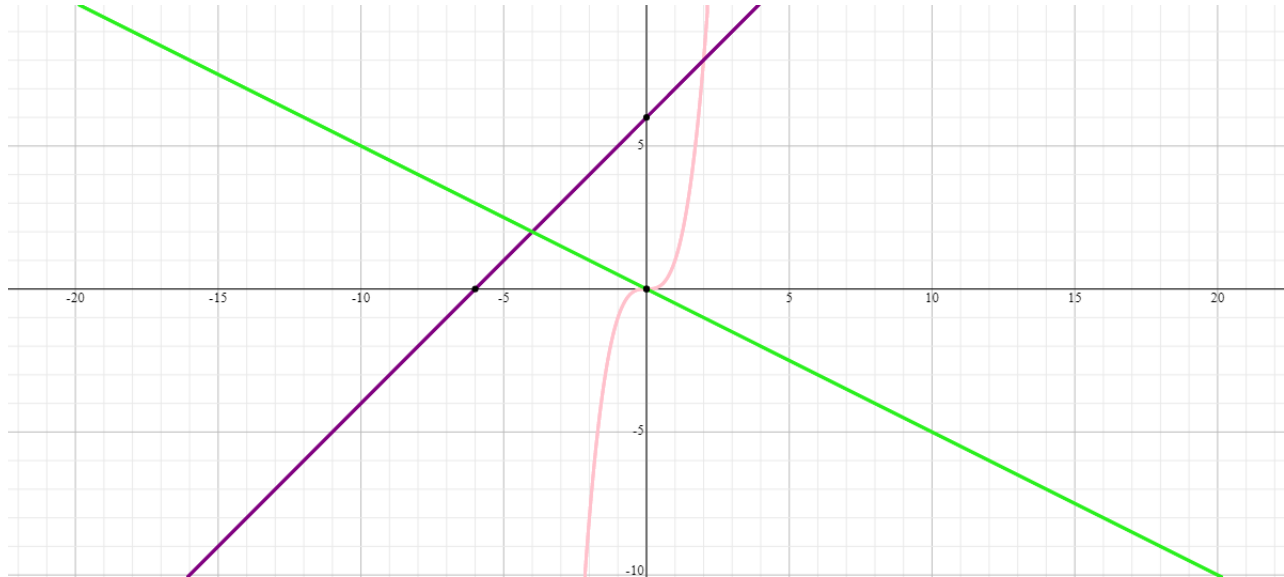
2. Find the area bounded by the given curve and the  $x$ -axis on the interval  $[-10, 10]$ .

$$y = \frac{2x}{x^2+6}$$



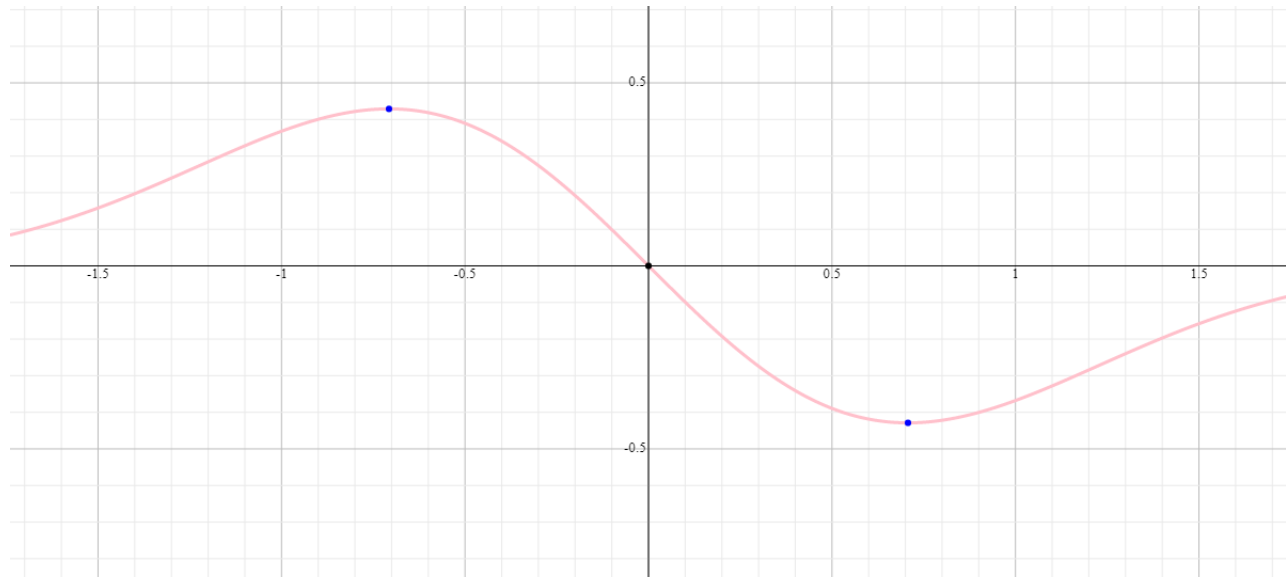
3. Find the area bounded by the given curves.

$$y = x^3, y = x + 6, y = -\frac{1}{2}x$$



4. Find the area of the region bounded below by the given curve and above by the  $x$ -axis from  $x = 0$  to  $x = 1$ .

$$y = -x \cdot e^{-x^2}$$



**5. Sketch the graphs of  $f$  and  $g$  and find the area of the region enclosed by these graphs and the vertical lines  $x = -2$  to  $x = 1$ .**

$$f(x) = x + 2 \text{ and } g(x) = x^2 - 4$$

**6. Sketch the graphs of  $f$  and  $g$  and find the area of the region enclosed by these graphs where  $x \geq 0$ .**

$$f(x) = x - 2 \text{ and } g(x) = \sqrt{x}$$

**7. Sketch the graph of  $f(x) = x^3$  and find the area of the region bounded below by the graph of  $f(x)$  and above by the  $x$ -axis from  $x = -5$  to  $x = 0$ .**

**8. Sketch the graphs of  $f(x) = x^2 + 2$  and  $g(x) = 1$ .**

**Find the area of the region enclosed by these graphs and the vertical lines  $x = 3$  and  $x = 5$ .**

**9. Sketch the graphs of  $f(x) = -x^2 + 2x + 1$  and  $g(x) = -x + 1$ .**

**Find the area of the region enclosed by these graphs and the vertical lines  $x = 0$  and  $x = 1$ .**