Question. Draw the graph of the function

$$f(x) = \frac{1}{2(x-2)^2}.$$

Solution. First draw a graph of the function

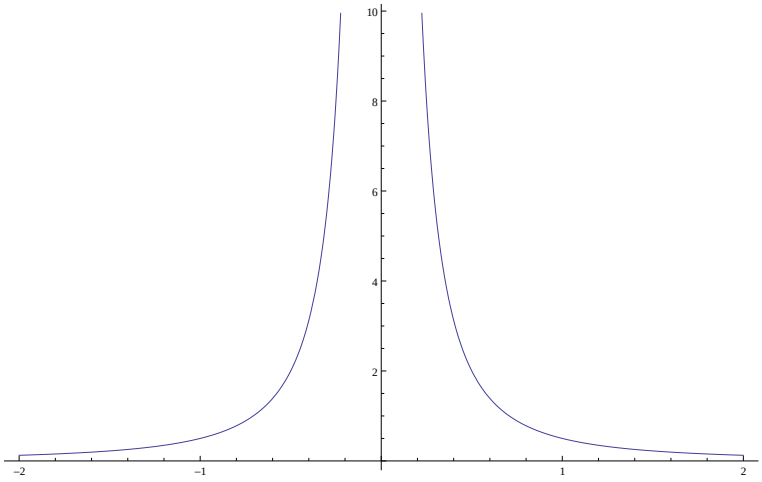
$$f_1(x) = \frac{1}{2x^2}$$

Its domain is $(-\infty, 0) \cup (0, +\infty)$ and the lines $x = 0$ and $y = 0$ are assymptotes.

The graph looks like hyperbola with both branches above x-axis. It can be constructed by calculating some points of this graph

x	y
-2	$1/8 = 0.125$
-1	$1/2 = 0.5$
$-1/2$	2
$-1/4$	8
$1/4$	8
$-1/2$	2
1	$1/2 = 0.5$
2	$1/8 = 0.125$

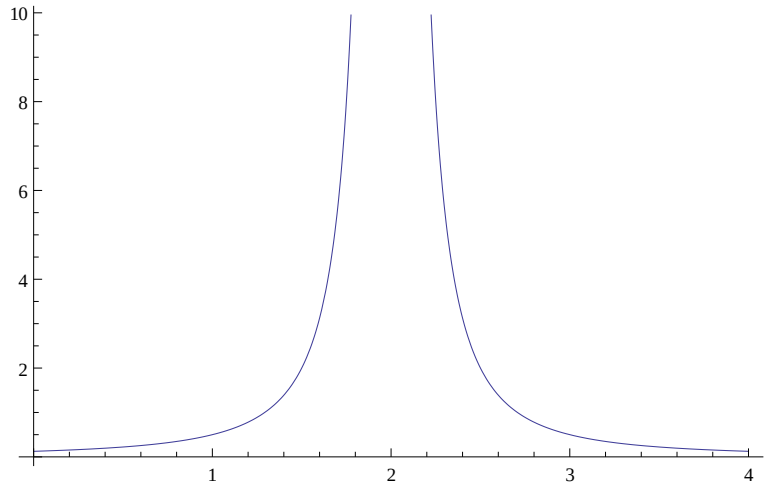
So the graphs will look as follows:



Now the graph of

$$f(x) = \frac{1}{2(x-2)^2}$$

can be obtained from the graph of f_1 by moving it by 2 to the right:



It has assymptote $x = 2$ and $y = 0$.