

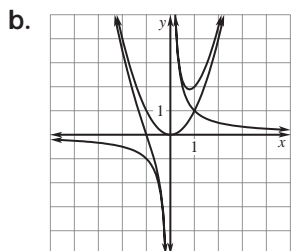
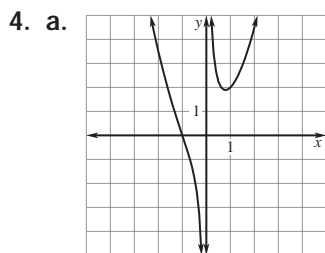
Answer Key

Challenge: Skills and Applications

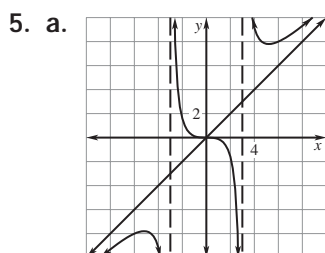
1. Sample answer: $y = \frac{-2x^2}{x^2 - 9}$

2. Sample answer: $y = \frac{x - 1}{x^2 - 4x}$

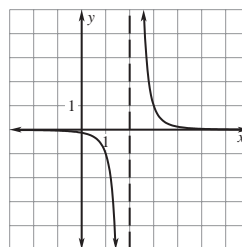
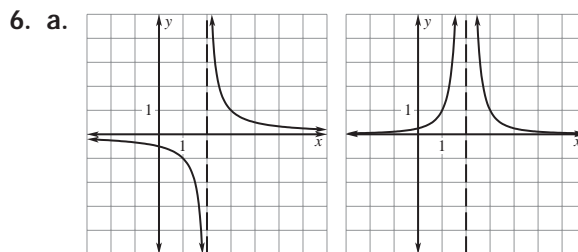
3. Sample answer: $y = \frac{x^2}{x^2 + 1}$



The original graph gets closer and closer to the graph of $y = \frac{1}{x}$ as $x \rightarrow 0$, and gets closer and closer to the graph of $y = x^2$ as $x \rightarrow +\infty$ and as $x \rightarrow -\infty$.



b. The graph of $y = x$ is an asymptote for the graph of the rational function.



b. Near the asymptote, if n is even $y \rightarrow +\infty$ or $y \rightarrow -\infty$ for both branches; if n is odd, $y \rightarrow +\infty$ for one branch and $y \rightarrow -\infty$ for the other branch.

7. $A = -1, B = 4$