

Practice

For each function, use the techniques shown in this section to sketch the graph of the function. Use $f(x)$ to find the domain, intercepts, and asymptotes.

Use $f'(x)$ to find the critical numbers, intervals of increase or decrease, and local extrema. Use $f''(x)$ to find concavity and points of inflection.

$$1. f(x) = (x - 1)^{\frac{1}{3}}$$

$$2. f(x) = (x - 4)^{\frac{2}{3}}$$

$$3. f(x) = \sqrt{x + 5}$$

$$4. f(x) = \sqrt{(x + 3)^2}$$

$$5. f(x) = \frac{15}{x + 3}$$

$$6. f(x) = (2x - 4)^{-2}$$

$$7. f(x) = (x^3 + x)^2$$

$$8. f(x) = (x^2 - 9)^2$$

$$9. f(x) = x(x^2 - 12)$$

$$10. f(x) = x\sqrt{4 - x}$$

$$11. f(x) = \frac{x}{(x - 2)^2}$$

$$12. f(x) = \frac{x}{\sqrt{x^2 - 1}}$$

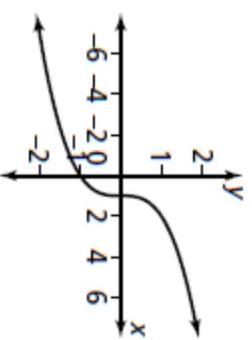
$$13. f(x) = \frac{(x - 1)^2}{(x + 1)^3}$$

$$14. f(x) = (x^2 + 1)^2(x^2 - 1)^3$$

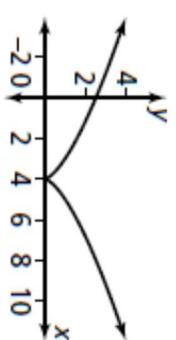
$$15. f(x) = \left(\frac{x - 2}{x + 3}\right)^2$$

Answers

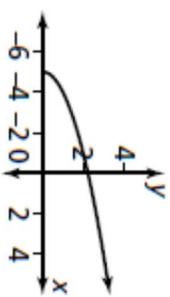
1.



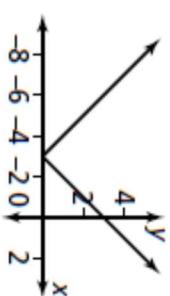
2.



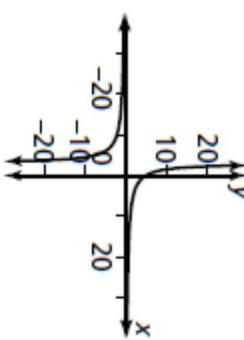
3.



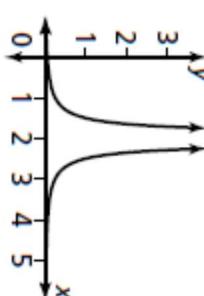
4.



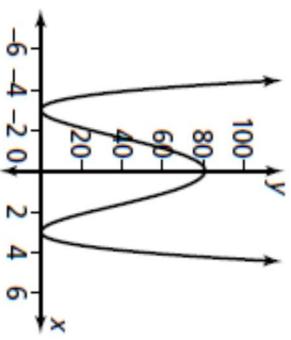
5.



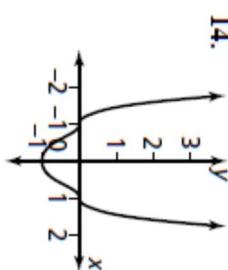
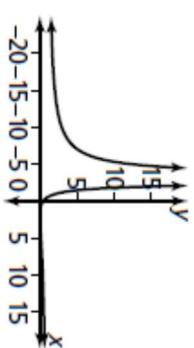
6.



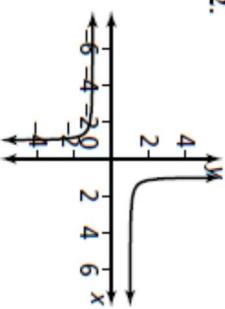
8.



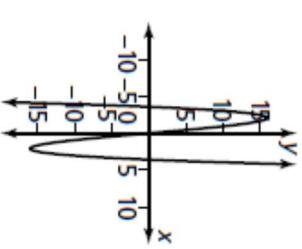
15.



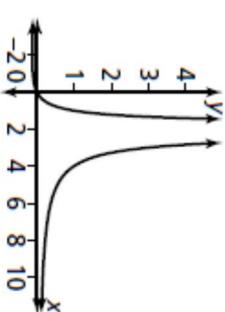
14.



11.



9.



10.

