# 8-7 Radical Functions

| Transformations of the Square-Root Parent Function $f(x) = \sqrt{x}$ | | |
|---|---|---|
| **Transformation** | **$f(x)$ Notation** | **Examples** |
| Vertical translation | $f(x) + k$ | $y = \sqrt{x} + 3$ 3 units up<br>$y = \sqrt{x} - 4$ 4 units down |
| Horizontal translation | $f(x - h)$ | $y = \sqrt{x - 2}$ 2 units right<br>$y = \sqrt{x + 1}$ 1 unit left |
| Vertical stretch/ compression | $af(x)$ | $y = 6\sqrt{x}$ vertical stretch by 6<br>$y = \frac{1}{2}\sqrt{x}$ vertical compression by $\frac{1}{2}$ |
| Horizontal stretch/ compression | $f\left(\frac{1}{b}x\right)$ | $y = \sqrt{\frac{1}{5}x}$ horizontal stretch by 5<br>$y = \sqrt{3x}$ horizontal compression by $\frac{1}{3}$ |
| Reflection | $-f(x)$<br>$f(-x)$ | $y = -\sqrt{x}$ across $x$-axis<br>$y = \sqrt{-x}$ across $y$-axis |

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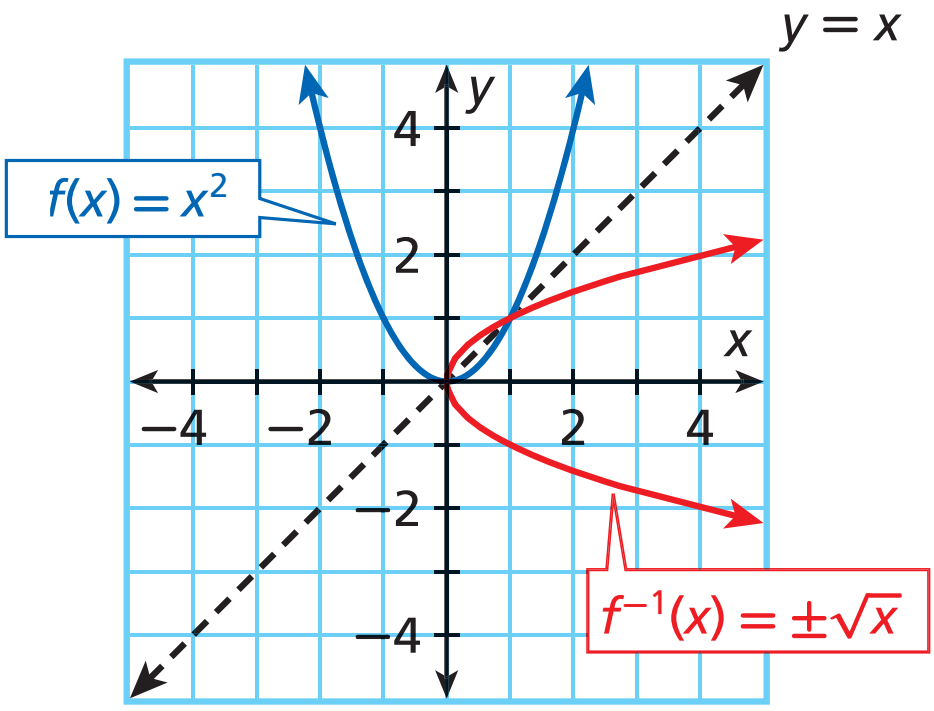
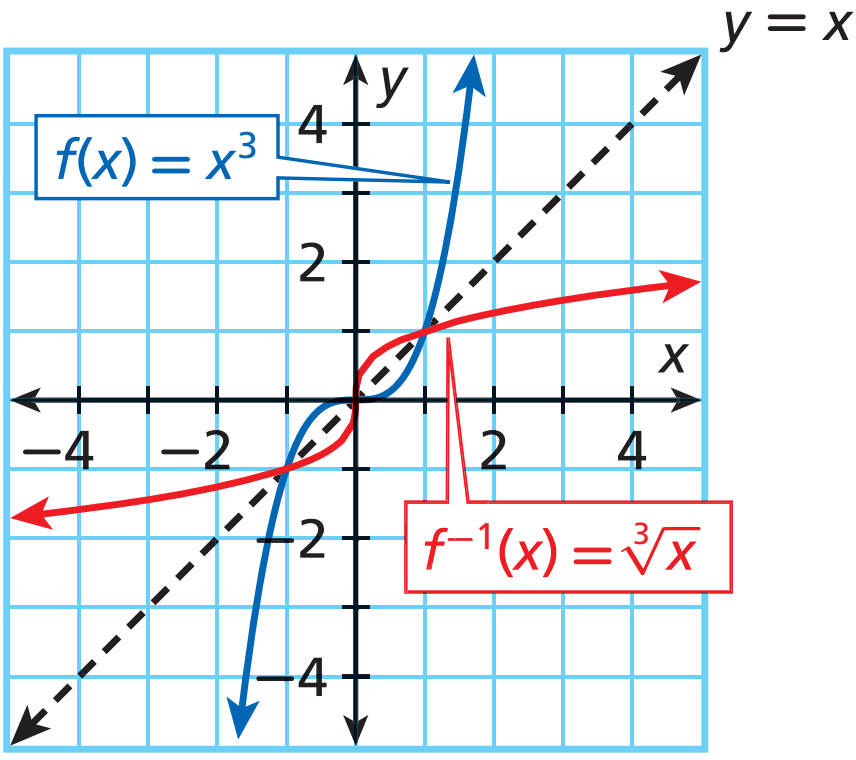
# 8-7 Radical Functions (continued)

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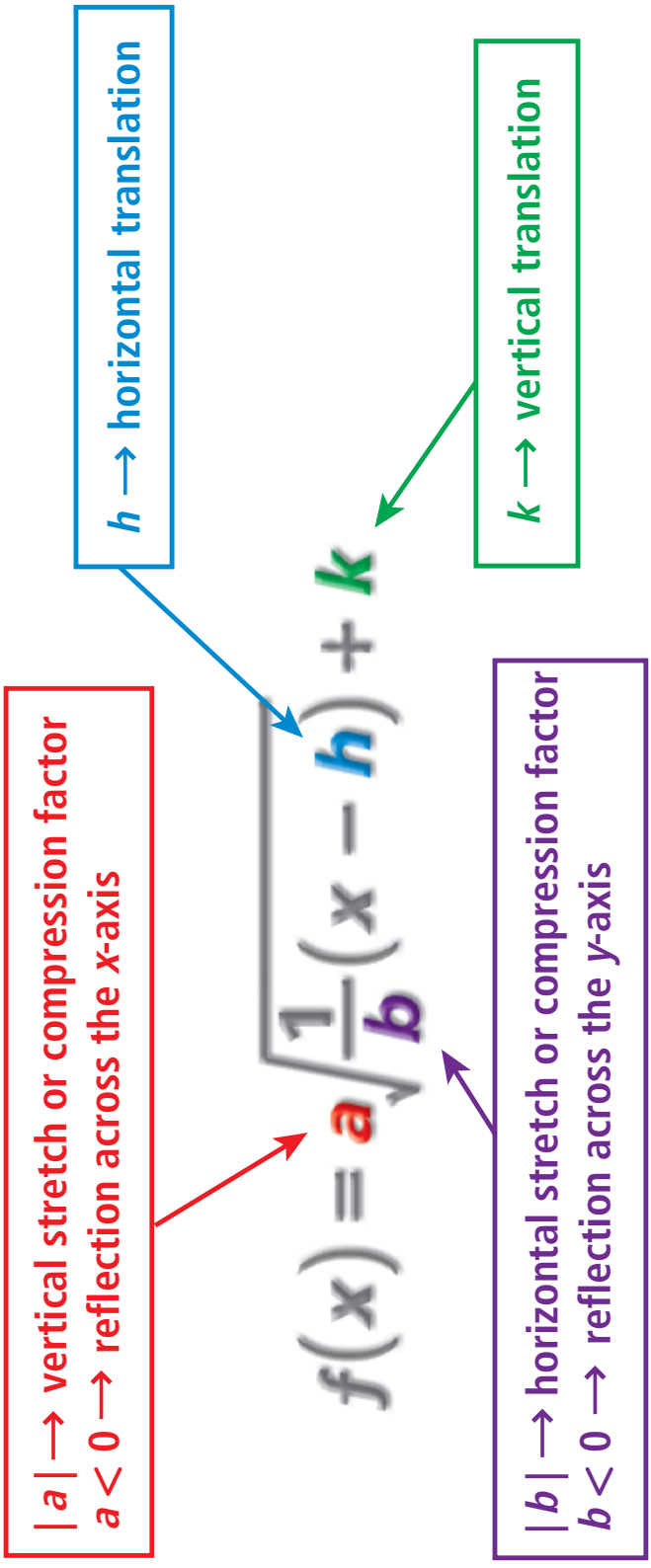


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