

Graph each transformation of the parent function $f(x) = \sqrt{x}$. Analyze the effect of the transformation on the graph of the parent function.

13. $y = \frac{1}{4}\sqrt{x}$ V shrink $\frac{1}{4}$

15. $y = \sqrt{\frac{1}{6}x}$ H shrink $\frac{1}{6}$

17. $y = \sqrt{-5x}$ H shrink $\frac{1}{5}$

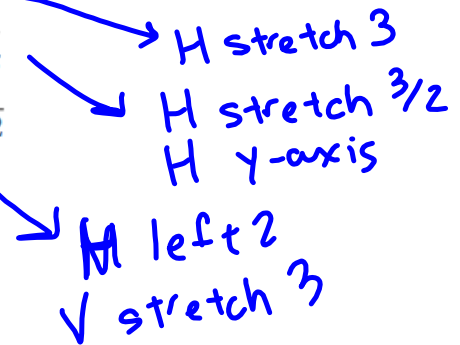
19. $y = \sqrt{2x} + 1$ H y-axis
 H shrink $\frac{1}{2}$
 V up 1 unit

14. $y = -2\sqrt{x}$ V stretch 2
 V x-axis

16. $y = \sqrt{\frac{1}{3}x}$

18. $y = \sqrt{-\frac{2}{3}x}$

20. $y = 3\sqrt{x+2}$



$y = -f(x)$
 V x-axis

$y = f(-x)$
 H y-axis

Does Order matter?

- 1 Yes
- 2 No
- 3 Yes
- 4 NO
- 5 NO
- 6 NO

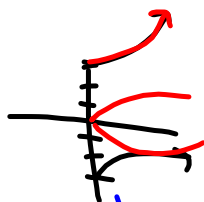
5)

a) R-xaxis, down 3

$$y = \sqrt{x}$$

$$y = -\sqrt{x} \text{ (vert)}$$

$$y = -\sqrt{x} - 3 \text{ (vert)}$$



b) down 3, R x-axis

$$y = \sqrt{x}$$

$$y = \sqrt{x} - 3$$

$$y = -(\sqrt{x} - 3) \rightarrow y = -\sqrt{x} + 3$$

1	up 3 (v) left 4 (H)	left 4 (H) up 3 (v)	Yes
2	V Stretch 3 ✓ up 2 ✓	up 2 ✓ V Stretch 3 ✓	No
3	R-y-axis H down 3 V	down 3 V R-y-axis H	Yes
4	R y-axis H Right 3 H	Right 3 H R y-axis H	No
5	R x-axis V down 3 V	down 3 V R x-axis V	No
6	H Shrink $\frac{1}{5}$ H Right 3 H	Right 3 H H Shrink $\frac{1}{5}$ H	NO

1) $y = 5\sqrt{x+3} - 1$

a) V stretch 5 H left 3 V down 1

b) Horiz left 3

c) V stretch 5 V down 1

CHOICE 1 $y = \sqrt{x}$
 left 3 $\sqrt{x+3}$
 down 1 $\sqrt{x+3} - 1$
 V stretch 5 $5(\sqrt{x+3} - 1)$
 $5\sqrt{x+3} - 5$

CHOICE 2
 left 3 $\sqrt{x+3}$
 V stretch 5 $5\sqrt{x+3}$
 down 1 $5\sqrt{x+3} - 1$

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2) $y = \sqrt{-x+3} - 1$

a) $y = \sqrt{-(x-3)} - 1$

H: R y-axis H Right 3 V down 1

b) Vert. down 1

c) H R-yaxis H Right 3

CHOICE 1
 V down 1 $\sqrt{x} - 1$
 H R-yaxis $\sqrt{-x} - 1$
 H Right 3 $\sqrt{-(x-3)} - 1$
 $\sqrt{-x+3} - 1$

CHOICE 2
 Vert down 1 $\sqrt{x} - 1$
 H Right 3 $\sqrt{x-3} - 1$
 H R-yaxis $\sqrt{-x-3} - 1$

