

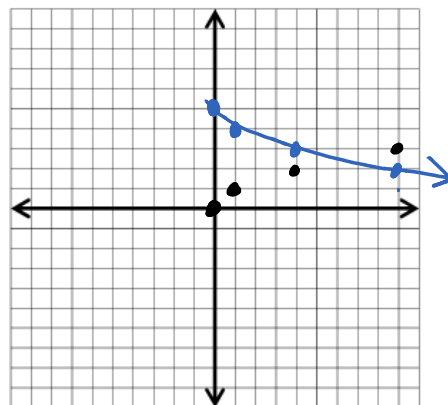
Multiple transformations

Wednesday, August 24, 2016 9:43 AM

Multiple transformations of parent functions

1. First reflect $y = \sqrt{x}$ over the x-axis. Then shift up 5 units.

| x | \sqrt{x} | $-\sqrt{x}$ | $-\sqrt{x} + 5$ |
|-----|------------|-------------|-----------------|
| 0 | 0 | 0 | 5 |
| 1 | 1 | -1 | 4 |
| 4 | 2 | -2 | 3 |
| 9 | 3 | -3 | 2 |

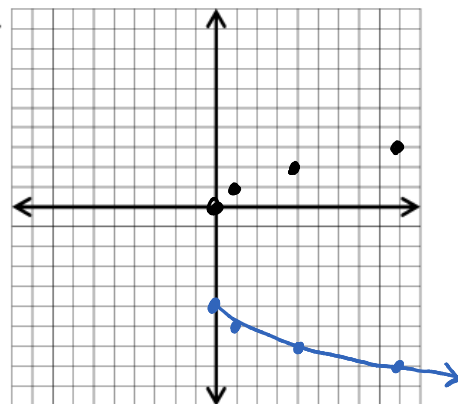


2. Write an equation for the transformation you just performed in question 1.

$$y = -\sqrt{x} + 5$$

3. Now shift $y = \sqrt{x}$ up 5 units. Then reflect across the x-axis.

| x | \sqrt{x} | $\sqrt{x} + 5$ | $-(\sqrt{x} + 5)$ |
|-----|------------|----------------|-------------------|
| 0 | 0 | 5 | -5 |
| 1 | 1 | 6 | -6 |
| 4 | 2 | 7 | -7 |
| 9 | 3 | 8 | -8 |



4. Write an equation for the transformation you just performed in question 3.

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

5. Describe the transformation that occurs to the parent function in $y = -x^2 - 7$.

Reflects across x-axis
Down 7

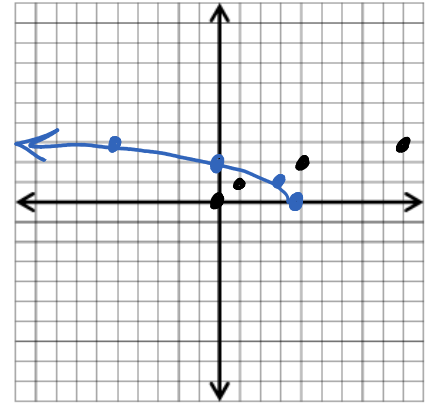
6. Describe the transformation that occurs to the parent function in $y = -(x^2 - 7)$.

Down 7
Reflects across x-axis

7. First reflect $y = \sqrt{x}$ over the y-axis. Then shift right 4 units.

$y = \sqrt{-(x-4)}$

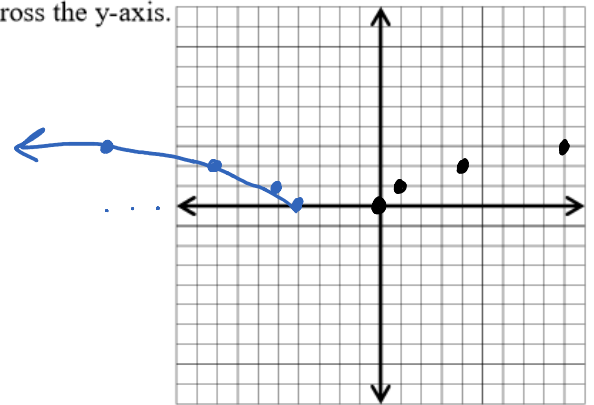
| | $-x$ | x | \sqrt{x} |
|----|------|-----|------------|
| 4 | 0 | 0 | 0 |
| 3 | -1 | 1 | 1 |
| 0 | -4 | 4 | 2 |
| -5 | -9 | 9 | 3 |



8. Now shift $y = \sqrt{x}$ right 4 units. Then reflect across the y-axis.

$y = \sqrt{-x-4}$

| $-(x+4)$ | $x+4$ | x | \sqrt{x} |
|----------|-------|-----|------------|
| -4 | 4 | 0 | 0 |
| -5 | 5 | 1 | 1 |
| -8 | 8 | 4 | 2 |
| -13 | 13 | 9 | 3 |



9. There are two possibilities for the equations of the transformations above. Fill in the tables below.

Either: $y = \sqrt{-x-4}$, $y = \sqrt{-(x-4)}$

| x | $y = \sqrt{-x-4}$ |
|-----|-------------------|
| -13 | 3 |
| -8 | 2 |
| -5 | 1 |
| -4 | 0 |

| x | $y = \sqrt{-(x-4)}$ |
|----|---------------------|
| -5 | 3 |
| 0 | 2 |
| 3 | 1 |
| 4 | 0 |

10. Compare your tables, functions, and graphs from 7 and 8. Which match?

11. Describe the transformation that occurs to the parent function in $y = \sqrt{-x+7}$.

② reflect across y-axis
① left 7