Parent Function and Transformations Homework Key Pg _____

1. $f(x) = \sqrt{x-3} + 2$ Parent Function: Radical Transformations: Right 3, Up 2

2. $f(x) = -(x+5)^2 - 1$ Parent Function: Quadratic Transformations: Reflected over x-axis, Left 5, Down 1

$-((x+5)^2+1)$

3. $f(x) = \frac{1}{2}(x-1)^2 + 9$ Parent Function: Quadratic Transformations: Right 1, up 9, Compressed 1/2

4. $f(x) = 3\sqrt{x} - 2$ Parent Function: Radical Transformations: Stretched 3, down 2

5. $f(x) = -\frac{2}{3}(x-10)^3$ Parent Function: Cubic Transformations: Right 10, Compressed 2/3, Reflect over x-axis

6. $f(x) = \frac{3}{2}|x+4| - 2$ Parent Function: Abs. value Transformations: Stretched 3/2, left 4, down 2

7. $f(x) = -|x| + 8$ Parent Function: Abs value Transformations: Reflect over x, then up 8

$|-x| + 8 \rightarrow$ over y-axis

$-(|x|-8)$

8. $f(x) = 3^{x+4} - 11$ Parent Function: Exponential Transformations: SKIP Left 4, down 11

9. $f(x) = 4\sqrt{x} + 1$ Parent Function: Radical Transformations: Stretched by 4, Up 1

10. $f(x) = x^2 - 6$ Parent Function: Quadratic Transformations: Down 6

Go in Order

Write the equation using the given transformations:

11. Parent function: Square Root *Horizontal shift left 5 *Vertical shift down 1 *x axis reflection

$-(\sqrt{x+5}-1) \longrightarrow -\sqrt{x+5}+1$

12. Parent function: Quadratic *Vertical Stretch by a factor of 4 *Shift right 3

$4(x-3)^2$

13. Parent function: Absolute Value *x axis reflection *Shift up 7

$-|x|+7$

Confusing Do you Reflect then shift? OR Apply rules to original? So, go in order L → R

14. Parent Function: Quadratic *Vertical compression by $\frac{3}{4}$ *Shift left 2 *Shift down 1

$\frac{3}{4}(x+2)^2-1$

15. Parent Function: Square Root *x-axis reflection *vertical stretch by a factor of 5 *Shift down 1

$-5\sqrt{x}-1$

16. Parent Function: Cubic *Shift right 9 *shift up 3

$(x-9)^3+3$

17. Parent Function: Exponential $f(x)=2^x$ *Horizontal shift right 4 *Vertical shift up 3

- SKIP -

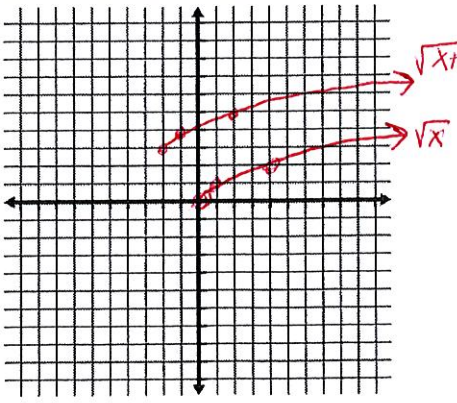
18. Parent Function: Square Root *Vertical stretch by 3 *shift down 8

$3\sqrt{x}-8$

Graph both the parent function and the transformed function on the same coordinate plane below:

19. $y=\sqrt{x}$

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



20. $y=x^2$

$y=(x-1)^2-5$