Algebra 2
Barber

7.5, 7.7, 7.8 Review

Name: Key

Solve each equation. Check for extraneous solutions (aka check your solutions back into the original problem to make sure they work!!)

1. $3\sqrt{x}+3=15$

$3\sqrt{x}=12$

$\sqrt{x}=4$ $\boxed{x=16}$

2. $4\sqrt{x}-1=3$

$\sqrt{x}=1$

$\boxed{x=1}$

3. $\sqrt[3]{2x+3}-2=5$

$\sqrt[3]{2x+3}=7$

$2x+3=343$

$2x=340$ $\boxed{x=170}$

4. $\sqrt{3x+4}=4$

$3x+4=16$

$3x=12$ $\boxed{x=4}$

5. $\sqrt{2x+3}-7=0$

$2x+3=49$

$2x=46$

$\boxed{x=23}$

6. $\sqrt{x+3}-x=0$

$x^2-x-3=0$

$\frac{1\pm\sqrt{(-1)^2-4(1)(-3)}}{2(1)}=\frac{1\pm\sqrt{13}}{2}$

7. $(x+5)^{2/3}=4$

$\left(\sqrt[3]{(x+5)^2}\right)^3=(4)^3$

$\sqrt{(x+5)^2}=\sqrt{64}$

$x+5=8$ $\boxed{x=3}$

8. $3(x-2)^{3/4}=24$

$(x-2)^{3/4}=8$

$\sqrt[4]{(x-2)^3}=8$

$(x-2)^3=8^4$

$\sqrt[3]{(x-2)^3}=\sqrt[3]{4096}$

$x-2=16$

$\boxed{x=18}$

9. $(\sqrt{3x+7})^2=(x+1)^2$

$3x+7=(x+1)^2$

$3x+7=x^2+2x+1$

$x^2-1x-6=0$

$(x-3)(x+2)=0$

$\boxed{x=3,-2}$

10. $((2x)^{1/2})^4=((x+5)^{1/4})^4$

$(2x)^2=(x+5)$

$4x^2-x-5=0$

$\frac{1\pm\sqrt{(-1)^2-4(4)(-5)}}{2(4)}=\frac{1\pm\sqrt{81}}{8}$

$\frac{1\pm9}{8}$

$\boxed{\frac{10}{8},-1}$

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11. **Find the inverse of each function.**

7. $y = x^2 + 2$

$x - 2 = y^2$

$\boxed{\sqrt{x-2} = y}$

8. $y = x + 2$

$\boxed{x - 2 = y}$

9. $y = 3(x + 1)$

$x = 3(y+1)$

$\boxed{\frac{x}{3} - 1 = y}$

16. $y = 3x^2 - 2$

$x + 2 = 3y^2$

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

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

17. $y = (x + 4)^2 - 4$

$x = (y+4)^2 - 4$

$\sqrt{x+4} = \sqrt{(y+4)^2}$

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

$-4 \qquad -4$

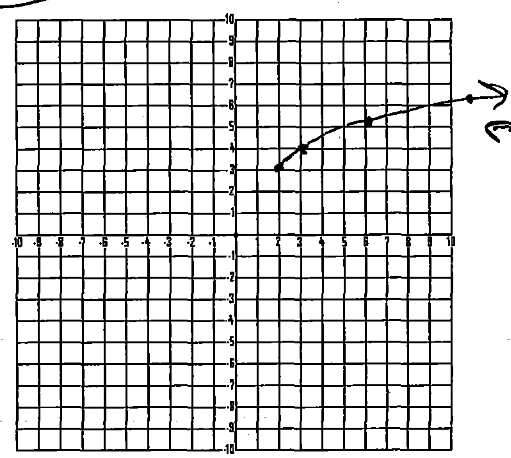
$\boxed{\sqrt{x+4} - 4 = y}$

18. $y = -x^2 + 4$

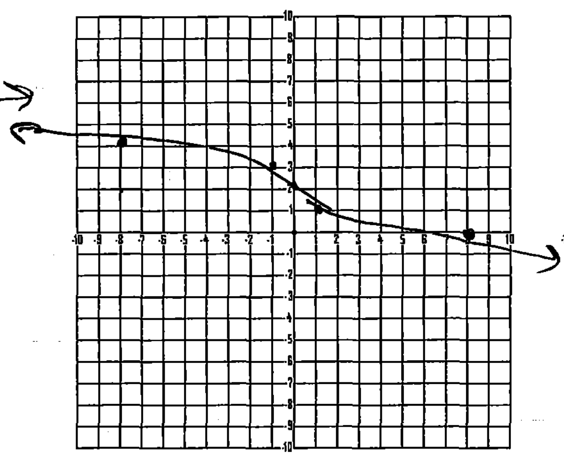
$\boxed{\sqrt{-x+4} = y}$

12. Graph each parent function and the new function.

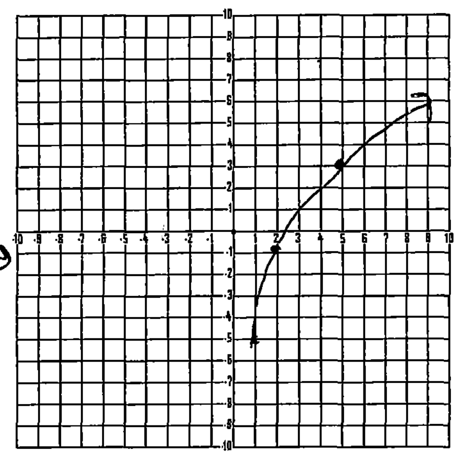
$y = \sqrt{x-2} + 3$



$y = -\sqrt[3]{x} + 2$



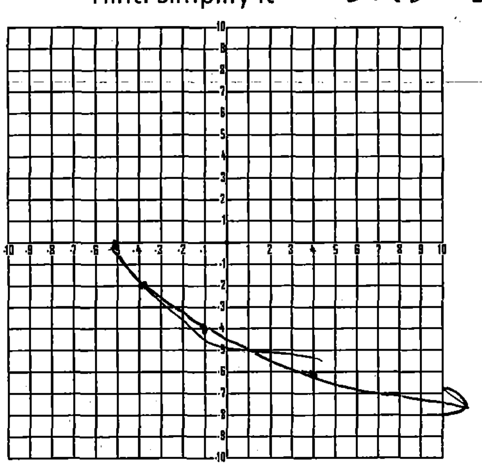
$y = 4\sqrt{x-1} - 5$



$-\sqrt{4(x+5)}$

$y = -\sqrt{4x + 20}$

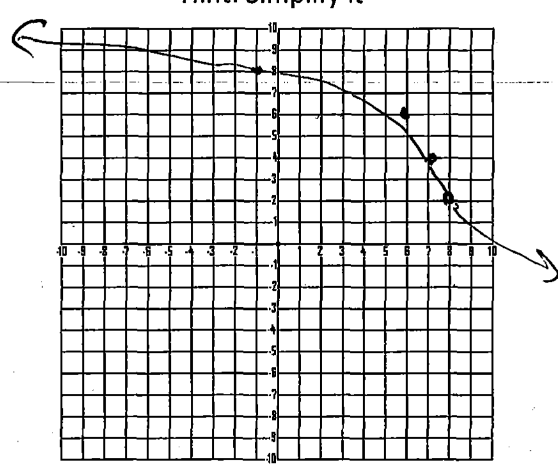
Hint: simplify it $-2\sqrt{x+5}$



$y = -2\sqrt[3]{x-7} + 4$

$y = -\sqrt[3]{8x - 56} + 4$

Hint: Simplify it



Write the domain and range for the first graph

D: $[2, \infty)$

R: $[3, \infty)$