Algebra 2
Radicals Review #2

Name:_____

Simplify

1. $\sqrt{8x^3}\cdot(2xz^5)^{\frac{1}{2}}\cdot\sqrt{4x^3z^4}$

$\sqrt{8x^3}\sqrt{2xz^5}\sqrt{4x^3z^4}$

$\sqrt{64x^7z^9} = 8x^3z^4\sqrt{xz}$

2. $(9+2\sqrt{5})-(1+\sqrt{45})$

$-3\sqrt{5}$

$8-\sqrt{5}$

3. $7\sqrt{20}+8\sqrt{5}-2\sqrt{45}$

$7\cdot2\sqrt{5}+8\sqrt{5}-2\cdot3\sqrt{5}$

$14\sqrt{5}+8\sqrt{5}-6\sqrt{5}$

$16\sqrt{5}$

4. $(\sqrt{2}-2\sqrt{3})(5\sqrt{2}-\sqrt{3})$

$5\cdot2-\sqrt{6}-10\sqrt{6}+2\cdot3$

$10+6-\sqrt{6}-10\sqrt{6}$

$16-11\sqrt{6}$

5. $\left(3-\sqrt{8}\right)^2$

$(3-2\sqrt{2})^2$

$(3-2\sqrt{2})(3-2\sqrt{2})$

$9-6\sqrt{2}-6\sqrt{2}+4\cdot2$

$17-12\sqrt{2}$

6. $\left(\frac{5}{1-\sqrt{6}}\right)\left(\frac{1+\sqrt{6}}{1+\sqrt{6}}\right)$

$\frac{5+5\sqrt{6}}{1-6} = \frac{5+5\sqrt{6}}{-5} = -1-\sqrt{6}$

7. $\frac{14}{2\sqrt{3}+5}\left(\frac{2\sqrt{3}-5}{2\sqrt{3}-5}\right) =$

$\frac{14}{(2\sqrt{3}+5)}\left(\frac{2\sqrt{3}-5}{2\sqrt{3}-5}\right) =$

$\frac{28\sqrt{3}-70}{4\cdot3-25} = \frac{28\sqrt{3}-70}{-13}$

$\frac{-28\sqrt{3}+70}{13}$

Solve each radical equation. If the problem has no real solution, state no solution.

8. $\left(\sqrt{x^2-15}=7\right)^2$

$x^2-15=49$

$x^2=64$

$x=\pm8$

9. $\left(\sqrt{x-4}=\sqrt{x+4}\right)^2$

$x-4=x+4$

$-4=4$

No solution

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

$x+5=3x-2$

$7=2x$

$\frac{7}{2}=x$

$\sqrt{36-2}=\sqrt{16}=4$

$\sqrt{3\cdot1-2}=1-2$

11. $\sqrt{2x-5}+4=3$

$\sqrt{2x-5}=-1$

No Solution

12. $\sqrt{4x+5}=2x-2$

$4x+5=4x^2-8x+4$

$0=4x^2-12x-1$

$x=\frac{12\pm\sqrt{144-4(4)(-1)}}{2(4)}$

$x=\frac{12\pm\sqrt{160}}{8}$

$\frac{12\pm4\sqrt{10}}{8}$

only +

$\frac{3+\sqrt{10}}{2}$

13. $\left(\sqrt{3x-2}=x-2\right)^2$

$3x-2=x^2-4x+4$

$0=x^2-7x+6$

$0=(x-6)(x-1)$

$x=6$ x

State the domain and range of the following radical functions.

14. $m(x)=\sqrt{2x-16}$

$\sqrt{2(x-8)}$

D: $[8,\infty)$

R: $[0,\infty)$

15. $t(x)=\sqrt{4(x-2)+3}$

$\sqrt{4x-8+3}$

$\sqrt{4x-5}$

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

D: $[\frac{5}{4},\infty)$

R: $[0,\infty)$

16. $h(x)=\sqrt{5x^2}$

D: $\mathbb{R}$

R: $[0,\infty)$

State how the graph shifted from $y=\sqrt{x}$.

16. $F(x)=-\sqrt{x+2}-8$

left 2

down 8

reflect over x-axis

17. $U(x)=3\sqrt{x+1}-12$

left 1

down 12

stretched by a factor of 2

18. $N(x)=\sqrt{-3x+6}+1$

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

right 2

up 1

reflect over y-axis

Find the inverse of the following equations.

19. $y = x^2 - 3$

$x = y^2 - 3$

$x+3 = y^2$

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

20. $y = x^2 + 6x$

$9 + x = y^2+6y+9$

$\sqrt{9+x} = \sqrt{(y+3)^2}$

$\pm\sqrt{9+x} = y+3$

$-3\pm\sqrt{9+x} = y$

21. $y = x^2 - 6x + 9$

$x = y^2-6y+9$

$x = (y-3)^2$

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

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