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Date _____
Algebra II

PS
1
4
9
16
25
36
49
64
81
100

Imaginary Numbers

Reduce the following radicals

1. $\sqrt{-64}$

$$i\sqrt{64}$$
$$8i$$

2. $\sqrt{-50}$

$$i\sqrt{50}$$
$$\begin{array}{c} PS \quad NPS \\ i\sqrt{25} \sqrt{2} \\ 5i\sqrt{2} \end{array}$$

3. $\sqrt{-45}$

$$i\sqrt{45}$$
$$\begin{array}{c} PS \quad NPS \\ i\sqrt{9} \sqrt{5} \\ 3i\sqrt{5} \end{array}$$

4. $\sqrt{-75}$

$$i\sqrt{75}$$
$$\begin{array}{c} PS \quad NPS \\ i\sqrt{25} \sqrt{3} \\ 5i\sqrt{3} \end{array}$$

5. $\sqrt{-20}$

$$i\sqrt{20}$$
$$\begin{array}{c} PS \quad NPS \\ i\sqrt{4} \sqrt{5} \\ 2i\sqrt{5} \end{array}$$

6. $\sqrt{-54}$

$$i\sqrt{54}$$
$$\begin{array}{c} PS \quad NPS \\ i\sqrt{9} \sqrt{6} \\ 3i\sqrt{6} \end{array}$$

7. $\sqrt{-162}$

$$i\sqrt{162}$$
$$\begin{array}{c} PS \quad NPS \\ i\sqrt{81} \sqrt{2} \\ 9i\sqrt{2} \end{array}$$

8. $\sqrt{-32}$

$$i\sqrt{32}$$
$$\begin{array}{c} PS \quad NPS \\ i\sqrt{16} \sqrt{2} \\ 4i\sqrt{2} \end{array}$$

Solve the following equations

9. $x^2 + 4 = 0$

$-4 -4$
 $\sqrt{x^2} = \sqrt{-4}$
 $x = \pm i\sqrt{4}$
 $x = \pm 2i$

11. $x^2 + 49 = 0$

$-49 -49$
 $\sqrt{x^2} = \sqrt{-49}$
 $x = \pm i\sqrt{49}$
 $x = \pm 7i$

13. $x^2 + 24 = 0$

$-24 -24$
 $\sqrt{x^2} = \sqrt{-24}$
 $x = \pm i\sqrt{24}$
 $\begin{matrix} \text{PS} & \text{NPS} \\ i\sqrt{4} & \sqrt{6} \end{matrix}$
 $x = \pm 2i\sqrt{6}$

15. $x^2 + 80 = 0$

$-80 -80$
 $\sqrt{x^2} = \sqrt{-80}$
 $x = \pm i\sqrt{80}$
 $\begin{matrix} \text{PS} & \text{NPS} \\ i\sqrt{16} & \sqrt{5} \end{matrix}$
 $x = \pm 4i\sqrt{5}$

17. $x^2 + 15 = 0$

$-15 -15$
 $\sqrt{x^2} = \sqrt{-15}$
 $x = \pm i\sqrt{15}$

10. $x^2 + 16 = 0$

$-16 -16$
 $\sqrt{x^2} = \sqrt{-16}$
 $x = \pm i\sqrt{16}$
 $x = \pm 4i$

12. $x^2 + 1 = 0$

$-1 -1$
 $\sqrt{x^2} = \sqrt{-1}$
 $x = \pm i\sqrt{1}$
 $x = \pm i$

14. $x^2 + 90 = 0$

$-90 -90$
 $\sqrt{x^2} = \sqrt{-90}$
 $x = \pm i\sqrt{90}$
 $\begin{matrix} \text{PS} & \text{NPS} \\ i\sqrt{9} & \sqrt{10} \end{matrix}$
 $x = \pm 3i\sqrt{10}$

16. $x^2 + 99 = 0$

$-99 -99$
 $\sqrt{x^2} = \sqrt{-99}$
 $x = \pm i\sqrt{99}$
 $\begin{matrix} \text{PS} & \text{NPS} \\ i\sqrt{9} & \sqrt{11} \end{matrix}$
 $x = \pm 3i\sqrt{11}$

18. $x^2 + 56 = 0$

$-56 -56$
 $\sqrt{x^2} = \sqrt{-56}$
 $x = \pm i\sqrt{56}$
 $\begin{matrix} \text{PS} & \text{NPS} \\ i\sqrt{4} & \sqrt{14} \end{matrix}$
 $x = \pm 2i\sqrt{14}$