Secondary Math 3 Name Key

Unit 6: Radicals Review

Date _____ Period ____

Simplify. Use absolute value signs when necessary.

1) $\sqrt[5]{-224m^5n^3}$

$-2m\sqrt[5]{7n^3}$

2) $\sqrt{192x^3y}$

$8|x|\sqrt{3xy}$

3) $\sqrt{216x^3y^4}$

$6y^2|x|\sqrt{6x}$

4) $\sqrt{20xy^2}$

$2|y|\sqrt{5x}$

5) $\sqrt{150u^4v^2}$

$5u^2|v|\sqrt{6}$

6) $\sqrt[3]{162x^5y^5}$

$3xy\sqrt[3]{6x^2y^2}$

7) $\sqrt[3]{20p^3} \cdot \sqrt[3]{25p^3}$

$5p^2\sqrt[3]{4}$

8) $\sqrt{5x^2} \cdot \sqrt{3x^2}$

$x^2\sqrt{15}$

9) $-5\sqrt[4]{3m} \cdot \sqrt[4]{2m^3}$

$-5|m|\sqrt[4]{6}$

10) $-3\sqrt[6]{128x^7} \cdot \sqrt[6]{192x^5}$

$-12x^2\sqrt[6]{6}$

11) $3\sqrt{5x} \cdot -5\sqrt{10x^3}$

$-75x^2\sqrt{2}$

12) $-4\sqrt[3]{-4a^2} \cdot -4\sqrt[3]{16a^4}$

$-64a^2$

13) $\frac{\sqrt{3v^4}}{\sqrt{2v^2}}$

$\frac{|v|\sqrt{6}}{2}$

14) $\frac{\sqrt{5r}}{\sqrt{2r}}$

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

15) $\dfrac{5}{5\sqrt{2x^2y^4}}$

$\dfrac{\sqrt{2}}{2y^2|x|}$

16) $\dfrac{5\sqrt{5x^3}}{\sqrt{3x^4}}$

$\dfrac{5\sqrt{15x}}{3|x|}$

17) $\dfrac{4\sqrt{3r^4}}{\sqrt{5r^2}}$

$\dfrac{4|r|\sqrt{15}}{5}$

18) $\dfrac{\sqrt{20x^4y^2}}{2\sqrt{12x^2y^3}}$

$\dfrac{|x|\sqrt{15y}}{6|y|}$

19) $-2\sqrt{45} - 3\sqrt{12} + 2\sqrt{27}$

$-6\sqrt{5}$

20) $-\sqrt{27} - \sqrt{27} + 2\sqrt{2}$

$-6\sqrt{3} + 2\sqrt{2}$

21) $3\sqrt{3} - \sqrt{6} - 2\sqrt{3}$

$\sqrt{3} - \sqrt{6}$

22) $-\sqrt{27} + 3\sqrt{27} - \sqrt{24}$

$6\sqrt{3} - 2\sqrt{6}$

23) $-2\sqrt[3]{40} - \sqrt[3]{162} + 3\sqrt[3]{5}$

$-\sqrt[3]{5} - 3\sqrt[3]{6}$

24) $3\sqrt{8} + 2\sqrt{8} - \sqrt{45}$

$10\sqrt{2} - 3\sqrt{5}$

Simplify.

25) $(-1 + 5\sqrt{2})(-2 + \sqrt{2})$

$12 - 11\sqrt{2}$

26) $(2 + \sqrt{2})(-3 + \sqrt{2})$

$-4 - \sqrt{2}$

27) $(\sqrt{5} - 2)(-\sqrt{5} - 2)$

-1

28) $(\sqrt{2} - 4\sqrt{5})(\sqrt{5} + \sqrt{5})$

$2\sqrt{10} - 40$

29) $(1-3\sqrt{5})(3-3\sqrt{5})$

$48-12\sqrt{5}$

30) $(-\sqrt{5}+\sqrt{3})(\sqrt{5}+\sqrt{3})$

-2

Simplify. Assume that all variables are positive.

31) $\dfrac{4n}{8\sqrt{6n^2}}$

$\dfrac{\sqrt{6}}{12}$

32) $\dfrac{4\sqrt{7x^2}}{\sqrt{5x^4}}$

$\dfrac{4\sqrt{35}}{5x}$

33) $\dfrac{\sqrt{4n^3}}{\sqrt{5n^2}}$

$\dfrac{2\sqrt{5n}}{5}$

34) $\dfrac{\sqrt{2b^3}}{4\sqrt{7b^2}}$

$\dfrac{\sqrt{14b}}{28}$

35) $\dfrac{5}{\sqrt[3]{25a^2}}$

$\dfrac{\sqrt[3]{5a}}{a}$

36) $\dfrac{2n}{\sqrt[4]{n^2}}$

$2\sqrt[4]{n^2}$

37) $\dfrac{x^2}{\sqrt[3]{2x^2}}$

$\dfrac{x\sqrt[3]{4x}}{2}$

38) $\dfrac{2}{\sqrt[3]{n}}$

$\dfrac{2\sqrt[3]{n^2}}{n}$

39) $\dfrac{4\sqrt{10}-\sqrt{5}}{-3+4\sqrt{7}}$

$\dfrac{12\sqrt{10}+16\sqrt{70}-3\sqrt{5}-4\sqrt{35}}{103}$

40) $\dfrac{8+\sqrt{5}}{\sqrt{3}-4}$

$\dfrac{-8\sqrt{3}-32-\sqrt{15}-4\sqrt{5}}{13}$

41) $\dfrac{7+\sqrt{2}}{2\sqrt{2}+5\sqrt{5}}$

$\dfrac{-14\sqrt{2}+35\sqrt{5}-4+5\sqrt{10}}{117}$

42) $\dfrac{-6-7\sqrt{7}}{\sqrt{6}-7\sqrt{10}}$

$\dfrac{6\sqrt{6}+42\sqrt{10}+7\sqrt{42}+49\sqrt{70}}{484}$

Solve each equation. Remember to check for extraneous solutions.

43) $\sqrt{18-2x}=\sqrt{2x-2}$

$\{5\}$

44) $11=10+\sqrt{8-x}$

$\{7\}$

45) $\sqrt{v-6}=\sqrt{2v-20}$

$\{14\}$

46) $1+\sqrt{-1-37b}=7$

$\{-1\}$

47) $\sqrt{\dfrac{b}{2}}-6=-5$

$\{2\}$

48) $\sqrt{6-v}=v$

$\{2\}$

Simplify.

49) $8^{\frac{2}{3}}\cdot 4^{\frac{1}{5}}$

$2^{\frac{12}{5}}$

50) $6^{\frac{1}{4}}\cdot 36^{\frac{2}{5}}$

$6^{\frac{21}{20}}$

51) $125^{\frac{2}{3}}\cdot 25^{3}$

5^{8}

52) $4^{\frac{5}{4}}\cdot 32^{\frac{1}{3}}$

$2^{\frac{11}{3}}$

53) $3^{\frac{2}{7}}\cdot 81^{\frac{2}{5}}$

$3^{\frac{66}{35}}$

54) $7^{\frac{8}{3}}\cdot 49^{\frac{3}{4}}$

$7^{\frac{25}{6}}$