Name Key Hour

Algebra 2 **Review 7.4 -7.6 NO CALCULATOR SHOW ALL WORK**

1. **Write each expression in radical form.**

$(2x)^{\frac{3}{2}}$ $\sqrt[3]{2x}$

$a^{\frac{4}{5}}$ $\sqrt[5]{a^4}$

$d^{2.5} = d^{5/2}$ $\sqrt{d^5} = (\sqrt{d})^5$

2. **Write each expression in exponential form.**

$\sqrt{x^7}$ $x^{7/2}$

$\sqrt[3]{m}$ $m^{1/3}$

$\sqrt[4]{(5ab)^3}$ $(5ab)^{3/4}$

In 3 – 9, simplify completely.

3. $-9^{\frac{3}{2}}$ 3. -27

4. $(16)^{-.75} = 16^{-3/4} = \left(\frac{1}{16}\right)^{3/4}$ $\frac{1}{16^{3/4}}$ 4. $\frac{1}{8}$

5. $\left(\frac{1}{27}\right)^{\frac{-2}{3}} = 27^{2/3}$ 5. 9

6. $8^{\frac{3}{3}}$ 6. 4

7. 13^0 7. 1

8. $\left(\frac{1}{16}\right)^{\frac{5}{4}}$ 8. $\frac{1}{2}$

9. $32^{-0.4}$ $32^{-2/5} = \left(\frac{1}{32}\right)^{2/5}$ 9. $\frac{1}{4}$

In 10 & 11, simplify using <u>only positive exponents</u>.

10. $\left(3a^{\frac{1}{2}}b^{\frac{1}{3}}\right)^{\frac{2}{1}}$ 10. $9ab^{2/3}$

11. $\left(a^{\frac{2}{3}}b^{\frac{-1}{2}}\right)^{\frac{-6}{1}} = a^{\frac{-12}{3}}b^{\frac{6}{2}}$ 11. $\frac{b^3}{a^4}$

In 12 – 14, simplify using only positive exponents.

12. $x^{\frac{3}{5}}x^{\frac{4}{5}}y^0$

12. $x^{7/5}$

13. $\left(\frac{y^8}{y^{-2}}\right)^{-\frac{1}{4}} = (y^4)^{-1/4} = y^{-1}$

13. $\frac{1}{y}$

14. $(9x^6y^{-2})^{\frac{1}{2}}$

14. $\frac{3x^3}{y}$

In 15 – 17, solve for *x*.

15. $2x^{\frac{3}{4}} = 16$

$x^{3/4} = 8$

$x = 8^{4/3}$

$2(16)^{3/4} \stackrel{?}{=} 16$

$2(8) = 16$ ✓

15. $x = 16$

16. $5(2x+1)^{\frac{1}{3}} = 5$

$(2x+1)^{1/3} = 1$

$2x+1 = 1$

$2x = 0$

16. $x = 0$

17. $\sqrt[3]{2x-4} = -2$

$2x-4 = -8$

$2x = -4$

$x = -2$

17. $x = -2$

In 18 – 20, solve for x. Check for extraneous solutions. Show your work.

18. $\sqrt{x+10}+2=4$

$\sqrt{x+10}=2$

$x+10=4$

$x=-6$

$\sqrt{-6+10}+2=4$

$2+2=4$ ✓

18. $x=-6$

19. $\left((2x+1)^{\frac{1}{2}}\right)^2=(-3)^2$

$2x+1=9$

$2x=8$

$x=4$

$2(8+1)^{1/2}$

$2(9)^{1/2}$

$3 \neq -3$

19. No Solution

20. $(x-3)^{\frac{1}{2}}=x-5$

$x-3=(x-5)^2$

$x-3=x^2-10x+25$

$0=x^2-11x+28$

$0=(x-4)(x-7)$

$x=4$ $x=7$

$(4-3)^{1/2} \neq 4-5$

$(7-3)^{1/2}=7-5$

$2=2$

20. $x=7$

Perform each function operation. Let $f(x) = 4x - 1$ and $g(x) = 2x^2 + 3$. **Show your work.**

21. $3f(x) - 5g(x)$

$3(4x-1) - 5(2x^2+3)$

$12x - 3 - 10x^2 - 15$

21. $-10x^2 + 12x - 18$

22. $f(x) \cdot f(x)$ $(4x-1)(4x-1)$

22. $16x^2 - 8x + 1$

23. $\frac{g(x)}{f(x)}$ State restrictions on domain

2. $4x - 1 \neq 0$

$4x \neq 1$

$x \neq \frac{1}{4}$

23. $\frac{2x^2+3}{4x-1}$, $x \neq \frac{1}{4}$

24. $(f \circ g)(-1)$ $2(-1)^2 + 3$

$2 + 3 = 5$

$f(5) = 19$

24. 19

25. $f(g(x))$

$4(2x^2+3) - 1$

$8x^2 + 12 - 1$

25. $8x^2 + 11$