

Name: Key

Review for Std. 4A and 4B

Simplify

1. $3\sqrt{32}$
 $3 \sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2}$
 $12\sqrt{2}$

2. $\sqrt{48x^5}$
 $\sqrt{2 \cdot 2 \cdot 2 \cdot 3 \cdot 2 \cdot x \cdot x \cdot x}$
 $4x^2\sqrt{3x}$

3. $\sqrt[3]{-108}$
 $-\sqrt[3]{2 \cdot 2 \cdot 3 \cdot 3 \cdot 3}$
 $-3\sqrt[3]{4}$

4. $-5\sqrt[3]{128x^6}$
 $-5 \sqrt[3]{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x}$
 $-20x^2\sqrt[3]{2}$

5. $\frac{2}{\sqrt{6}} \cdot \frac{\sqrt{6}}{\sqrt{6}} = \frac{2\sqrt{6}}{6} = \frac{\sqrt{6}}{3}$

6. $\sqrt{\frac{4}{52}} \cdot \frac{1}{\sqrt{13}} \cdot \frac{\sqrt{13}}{\sqrt{13}} = \frac{\sqrt{13}}{13}$

7. $\frac{6+\sqrt{8}}{2}$
 $\frac{6+2\sqrt{2}}{2}$
 $3+\sqrt{2}$

8. $\frac{3+\sqrt{12}}{3}$
 $\frac{3+2\sqrt{3}}{3}$

9. $5\sqrt{50} + \sqrt{8}$
 $5\sqrt{2 \cdot 5 \cdot 5} + \sqrt{2 \cdot 2 \cdot 2}$
 $25\sqrt{2} + 2\sqrt{2}$
 $27\sqrt{2}$

10. $3\sqrt{7} - 7\sqrt{2} - 7\sqrt{7}$
 $-7\sqrt{2} - 4\sqrt{7}$

11. $3(\sqrt{3} - 4)$
 $3\sqrt{3} - 12$

12. $\sqrt{5}(\sqrt{80} - \sqrt{3})$
 $\sqrt{5}(\sqrt{2 \cdot 2 \cdot 2 \cdot 5} - \sqrt{3})$
 $\sqrt{5}(4\sqrt{5} - \sqrt{3})$
 $20 - \sqrt{15}$

13. $\sqrt{\frac{64}{15x^2}} = \frac{8}{x} \cdot \frac{\sqrt{15}}{\sqrt{15}}$
 $\frac{8\sqrt{15}}{15x}$

14. $\sqrt{72a^5bc^4}$
 $\sqrt{2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 2 \cdot a \cdot a \cdot a \cdot a \cdot a \cdot b \cdot c \cdot c \cdot c \cdot c}$
 $6a^2c^2\sqrt{2ab}$

15. $\sqrt[4]{\frac{x^5}{y^8z^4}}$
 $\frac{x\sqrt[4]{x}}{y^2z}$

Evaluate $\sqrt{a^2 + bc^2}$ for the given value and write in simplest form.

16. $a=2$
 $b=4$
 $c=-3$
 $\sqrt{(2)^2 + (4)(-3)^2}$
 $\sqrt{4 + 36}$
 $\sqrt{40}$
 $\sqrt{2 \cdot 2 \cdot 2 \cdot 5}$
 $2\sqrt{10}$

17. $a=-1$
 $b=5$
 $c=2$
 $\sqrt{(-1)^2 + (5)(2)^2}$
 $= \sqrt{1 + 5(4)}$
 $= \sqrt{1 + 20}$
 $= \sqrt{21}$

18. $a=7$
 $b=3$
 $c=-5$
 $\sqrt{(7)^2 + (3)(-5)^2}$
 $\sqrt{49 + 75}$
 $\sqrt{124}$
 $\sqrt{2 \cdot 2 \cdot 31}$
 $2\sqrt{31}$

Solve the Quadratic Equations. Write your answers in exact form.

19. $5x^2 - 125 = 0$

$5x^2 = 125$

$x^2 = 25$

$x = \pm 5$

20. $x^2 + 14x = 15$

$x^2 + 14x - 15 = 0$

$(x+15)(x-1) = 0$

$x = 1, -15$

21. $x^2 + 2x = 5$

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

$\frac{-2 \pm \sqrt{4 - 4(1)(-5)}}{2(1)} = \frac{-2 \pm \sqrt{24}}{2} = \frac{-2 \pm 2\sqrt{6}}{2} = -1 \pm \sqrt{6}$

22. $(2x-3)(x+6) = 0$

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

$x = \frac{3}{2}$

$x+6=0$
 $-6 -6$
 $x=-6$

$x = -6$

23. $4x^2 - 371 = 29$

$4x^2 = 400$

$x^2 = 100$

$x = \pm 10$

24. $3x^2 - 120x = 0$

$3x(x-40) = 0$

$3x=0$
 $x=0$

$x-40=0$
 $+40 +40$
 $x=40$

25. $(2x-3)^2 = 9$

$2x-3 = \pm 3$

$2x-3=3$
 $+3 +3$
 $2x=6$

$x=3$

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

$x=0$

26. $x^2 - 4x = -1$

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

$\frac{4 \pm \sqrt{16 - 4(1)(1)}}{2(1)} = \frac{4 \pm \sqrt{12}}{2} = \frac{4 \pm 2\sqrt{3}}{2} = 2 \pm \sqrt{3}$

$x = 2 \pm \sqrt{3}$

27. $x^2 - 8x + 15 = 0$

$(x-3)(x-5) = 0$

$x-3=0$
 $+3 +3$
 $x=3$

$x-5=0$
 $+5 +5$
 $x=5$

28. $\frac{3x^2 - 18x + 12}{3} = \frac{0}{3}$

$x^2 - 6x + 4 = 0$

$\frac{6 \pm \sqrt{36 - 4(1)(4)}}{2(1)} = \frac{6 \pm \sqrt{20}}{2} = \frac{6 \pm 2\sqrt{5}}{2} = 3 \pm \sqrt{5}$

$x = 3 \pm \sqrt{5}$

29. $-21 = 15 - 2x^2$

$-36 = -2x^2$

$18 = x^2$
 $\pm \sqrt{18} = x$

$x = \pm 3\sqrt{2}$

30. $x^2 + 6x = -9$

$x^2 + 6x + 9 = 0$

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

$x+3=0$
 $-3 -3$
 $x=-3$

$x = -3$

Find the discriminant and the number of x-intercepts for the following equations.

31. $y = 4x^2 + 4x + 1$

$b^2 - 4ac$

$16 - 4(4)(1)$

0

ONE SOLUTION

32. $f(x) = 3x^2 + 8x + 8$

$b^2 - 4ac$

$64 - 4(3)(8)$

$64 - 96$

-32

NO REAL SOLUTIONS

33. $y = -x^2 + 5x + 13$

$b^2 - 4ac$

$25 - 4(-1)(13)$

$25 + 52$

77

2 real solutions