Name: _____ Date: _____

Simplify the radicals:

1. $\sqrt{32z^4}$

$4z^2\sqrt{2}$

2. $\sqrt{40a^7}$

3. $5\sqrt{6}-\sqrt{6}$

$4\sqrt{6}$

4. $\sqrt{5}+\sqrt{45}$

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

$8\sqrt{3}-2\sqrt{15}$

6. $3\sqrt{2}\cdot\sqrt{8}$

Solve each quadratic equation by factoring:

7. $5x^2+18x+9=0$

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

$x+3=0$ $\quad 5x+3=0$

$-3\ -3$ $\quad 5x=-3$

$x=-3$ $\quad x=-3/5$

8. $x^2-20=8x$

9. $2x^2+5x-3=0$

$(x+3)(2x-1)=0$

$x+3=0$ $\quad 2x-1=0$

$x=-3$ $\quad x=1/2$

10. $x^2-14x+13=0$

11. $2x^2-7x=x^2-12$

$-x^2+12\ \ -x^2+12$

$x^2-7x+12=0$

$(x-3)(x-4)=0$

$x-3=0$ $\quad x-4=0$

$x=3$ $\quad x=4$

12. $2x^2-15=-7x$

Solve each quadratic equation using square roots:

13. $x^2+4=29$

$-4\ \ -4$

$\sqrt{x^2}=\sqrt{25}$

$x=\pm5$

14. $\frac{1}{7}x^2-3=4$

15. $\frac{5(x-4)^2}{5}=\frac{125}{5}$

$\sqrt{(x-4)^2}=\sqrt{25}=\pm5$

$x-4=5$ $\quad x-4=-5$

$x=9$ $\quad x=-1$

16. $2(x-5)^2+2=-30$

$\frac{2(x-5)^2}{2}=\frac{-32}{2}$

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

* NO SOLUTION!

17. $\sqrt{(x+4)^2}=\sqrt{121}=\pm11$

$x+4=11$ $\quad x+4=-11$

$-4\ -4$ $\quad -4\ -4$

$x=7$ $\quad x=-15$

18. $\sqrt{(2x-3)^2}=\sqrt{9}=\pm3$

$2x-3=3$ $\quad 2x-3=-3$

$+3\ +3$ $\quad +3\ +3$

$\frac{2x}{2}=\frac{6}{2}$ $\quad \frac{2x}{2}=\frac{0}{2}$

$x=3$ $\quad x=0$

19. Find the intersection of the following functions algebraically.

$f(x) = 2x + 3$

$g(x) = x^2$

$2x+3=x^2$

$0=x^2-2x-3$

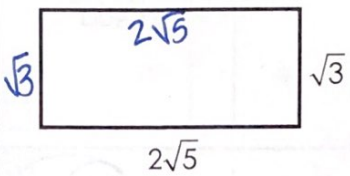
$0=(x-3)(x+1)$

$x=3$ $x=-1$

$y=3^2=9$ $y=(-1)^2=1$

$(3,9)$ $(-1,1)$

20. Find the **area** and **perimeter** for the diagram:



$P = 2\sqrt{5}+2\sqrt{5}+\sqrt{3}+\sqrt{3}$

$= 4\sqrt{5}+2\sqrt{3}$

$A = 2\sqrt{5}\cdot\sqrt{3}$

$= 2\sqrt{15}$

21. An object is dropped from a height of 128 feet. Disregard air resistance. How long does it take for the object to reach the ground (plug in h = 0)? $h = -16t^2 + s$

$0 = -16t^2 + 128$

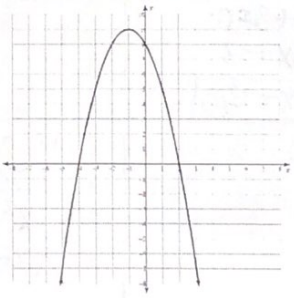
$-128 \quad -128$

$\frac{-128}{-16} = \frac{-16t^2}{-16}$

$t^2 = 8$

$t \approx 2.83$ seconds

22. What are the roots of the following graph?



A. x = 8 and x = 0

B. x = 2 and x = -4

C. x = 9 and x = -1

D. x = 4 and x = -2

23. Find the solution(s) to the following system.

$y = x + 2$

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

A. (1,4)

B. (4,6)

C. (1,3) and (4,6)

D. (3,1) and (6,4)

24. Solve the quadratic equation. $10x^2 + 2 = 542$

A. x = 54 and x = -54

B. $x = 3\sqrt{6}$ and $x = -3\sqrt{6}$

C. x = 16 and x = -16

D. $x = 7\sqrt{2}$ and $x = -7\sqrt{2}$