Secondary 2H **Name**_____ **Desk** _____

Unit 3 **Solve A Quadratic By Factoring And Taking Square Roots (4.2, 4.3)**

HOMEWORK HELP

Score _____

1. What is the first step in identifying the zeros of an equation?

2. What does the answer to the equation represent algebraically?

Find the zeros of each quadratic equation.

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

4. $(5x+8)(x-4)=0$

5. $(3x-1)(2x+1)=0$

6. $16x - x^2 = 0$

$-x^2+16x=0$

$-x(x-16)=0$

$-x=0 \quad x-16=0$

$\boxed{x=0} \quad \boxed{x=16}$

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

8. $x^2=-7x-10$

9. $15=x^2-2x$

10. $f(x)=2x^2-2x-24$

11. $f(x)=5x^2-4x-12$

$0=(5x \quad 6)(x \quad 2)$

12. $f(x)=3x^2+17x+10$

13. $f(x)=8x^2-28x-60$

$0=4(2x^2-7x-15)$

14. $f(x)=3x^2+54x+243$

$0=3(x^2+18x+81)$

15. $f(x) = 7x^2 + 7x - 14$

16. $f(x) = x^2 + 10x - 24$

17. $-4x^2 = x - 6$

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

18. $-18 = 15x + 3x^2$

19. $0 = 2x^2 + 7x - 9$

$0 = (x \quad 1)(2x \quad 9)$

20. $15 = 10x^2 + 25x$

$10x^2 + 25x - 15 = 0$

$5(2x^2 + 5x - 3) = 0$

21. $3x^2 + 17x = -10$

22. $18x + 8x^2 = -9$

$x = \frac{-3}{4} \quad x = \frac{-3}{2}$

23. $32x = 11 - 3x^2$

24. Paul solved the equation $x^2 + 8x + 15 = 0$ and arrived at solutions $x = 3$ and $x = 5$.

a. Are his solutions reasonable? Why or why not.

b. If his solution is not correct, what is the correct solution? Explain Paul's error.

25. Write a quadratic equation with solutions -4 and 3.

$f(x) = (x+4)(x-3)$ Am I done?

26. Write a quadratic equation with solutions ½ and 6.

$f(x) = (x - \frac{1}{2})(x-6) = (2x-1)(x-6)$

↑ no fractions, so we change it ↗

27. Write a quadratic equation with the only solution -5.

Remember: A quadratic expression has degree 2. So, there needs to be an x^2 term.

28. Write two other names for **solutions** to an equation.

29. What is the first step in identifying the zeros of a function?

30. How can you check if you have the correct solution to solving an equation?

31. x-intercepts should always be written as a coordinate point. What is the y-value of that coordinate?

In exercises 32-33, graph each function using the following steps. (Justify your answers by showing your work.)

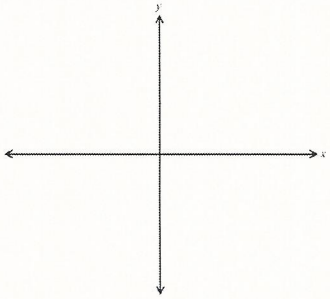
1st: Identify the zeros of the function. * set the equation equal to zero and solve.
2nd: Determine the x-intercepts. → $y = 0$
3rd: Determine the y-intercept. → $x = 0$
4th: Sketch the graph. Label the points on the graph.

32. $f(x) = 3x^2 + 5x - 2$

zero(s): $x =$ $\frac{1}{3}$ and $x =$ -2

x–intercept(s): (,) and (,)

y–intercept: (,)

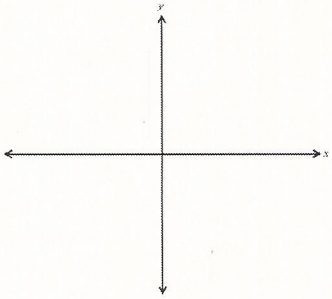


33. $f(x) = 2x^2 - x - 15$

zero(s): $x =$ and $x =$

x–intercept(s): (,) and (,)

y–intercept: (0, -15)



34. Frodo and Sam were solving the following equation $5(x-3)^2 = 20$

For Frodo's first step he wrote: $(5x-15)^2 = 20$

For Sam's first step he wrote: $(x-3)^2 = 4$

a. Who did the first step correctly?

b. Explain the other student's error.

Solve the equations using square roots. Completely simplify the answer(s). Justify each answer by showing all the steps to solve each equation. Don't forget "±"

35. $3(x-9)^2 = 12$

36. $\frac{-2(x+6)^2}{-2} = \frac{-90}{-2}$

$(x+6)^2 = 45$

$x+6 = \pm\sqrt{45} = \pm 3\sqrt{5}$

$x = -6 \pm 3\sqrt{5}$

37. $2(x-1)^2 + 3 = 21$

38. $8 + (x-4)^2 = 8$

39. $5 = (x+3)^2 - 2$

40. $-3(x-9)^2 - 6 = -30$

41. $7 - (x-3)^2 = 6$

$x = 4$ $x = 2$

42. $6 = \frac{1}{3}(x+4)^2 - 2$

43. $\frac{-1}{4}(x-2)^2 - 4 = -24$

$x = 2 \pm 4\sqrt{5}$