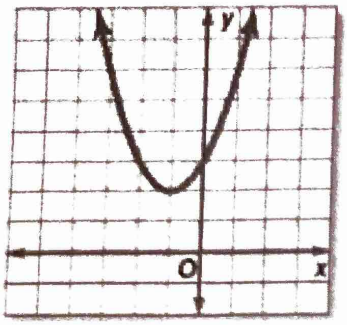
Day 06 HW Solving Quadratic Equations by Graphing & Factoring Name: Master E

Date: _____ Block _____

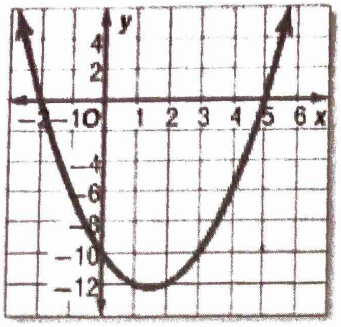
1-3: Use the related graph of each equation to determine its solutions.

1. $x^2 + 2x + 3 = 0$



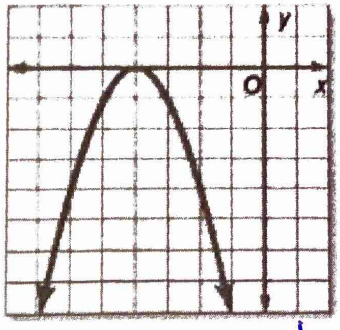
Solutions: No real soln.

2. $x^2 - 3x - 10 = 0$



Solutions: $x = -2$ & 5

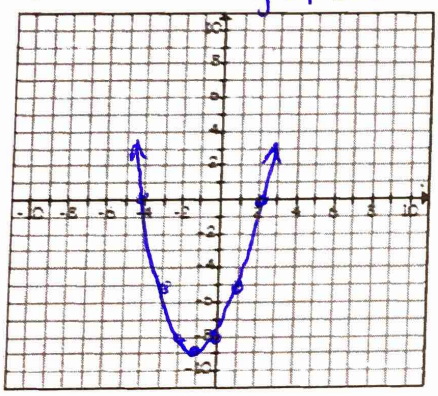
3. $-x^2 - 8x - 16 = 0$



Solutions: $x = -4$ (doubleroot!)

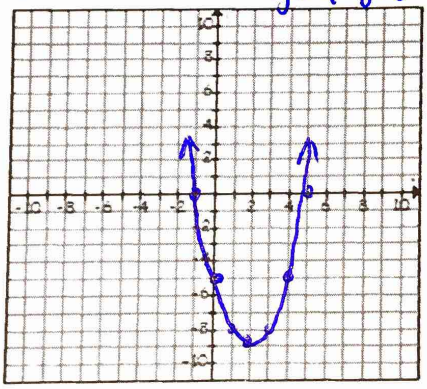
4-9: Solve each equation by graphing. DO NOT USE YOUR CALCULATOR!

4. $x^2 + 2x - 8 = 0$ $x = \frac{-2}{2} = -1$ $y = 1 - 2 - 8 = -9$



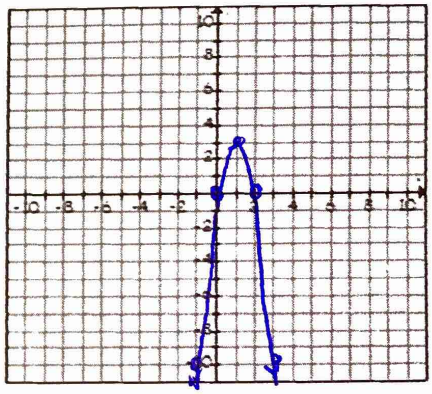
Solutions: $x = -4$ & 2

5. $x^2 - 4x - 5 = 0$ $x = \frac{4}{2} = 2$ $y = 4 - 8 - 5 = -9$



Solutions: $x = -1$ & 5

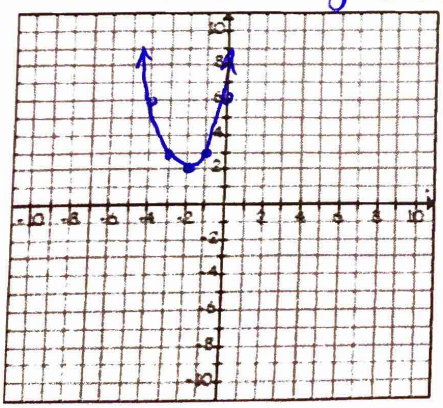
6. $-3x(x - 2) = 0$



Solutions: $x = 0$ & 2

7. $x^2 + 4x = -6$ $x = \frac{-4}{2} = -2$ $y = 4 - 8 + 6 = 2$

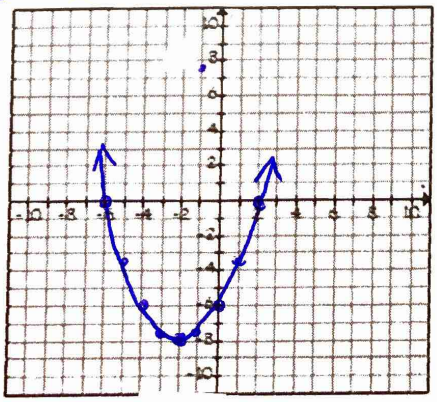
$x^2 + 4x + 6 = 0$



Solutions: No real soln.

8. $\frac{1}{2}(x + 2)^2 = 8$

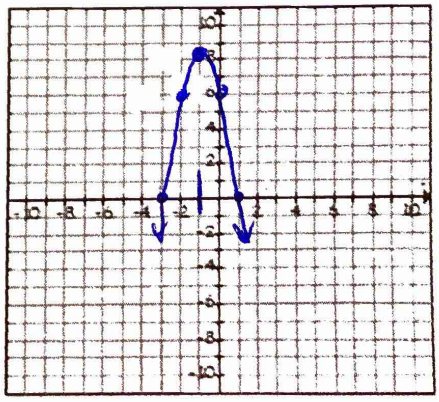
$\frac{1}{2}(x+2)^2 - 8 = 0$



Solutions: $x = -6$ & 2

$1a = \frac{1}{2}$ $3a = 1.5$ $5a = 2.5$ $7a = 3.5$

9. $-2(x - 1)(x + 3) = 0$ $x = -1$ $y = -2(-2)(2) = 8$



Solutions: $x = -3$ & 1

10- 15: Use the calculator to find the approximate roots of each quadratic equation rounded to the nearest hundredth.

10. $x^2 + 8x = 0$

Solutions: $x = -8$ & 0

11. $x^2 - 3x - 18 = 0$

Solutions: $x = -3$ & 6

12. $4x - x^2 + 8 = 0$

Solutions: $x = -1.46$ & 5.46

13. $-12 - 5x + 3x^2 = 0$

Solutions: $x = -1.33$ & 3

14. $x^2 - 6x + 4 = -8$

Solutions: No real soln.

15. $9 - x^2 = 12$

Solutions: No real soln

16- 24: Solve each quadratic equation by factoring and the Z.P.P.

16. $9a = 10a^2$

$10a^2 - 9a = 0$

$a(10a - 9) = 0$

$a = 0$ or $10a - 9 = 0$, $10a = 9$, $a = \frac{9}{10}$

17. $16x^2 = 49$

$16x^2 - 49 = 0$

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

$4x + 7 = 0$ $\quad 4x - 7 = 0$

$4x = -7$ $\quad 4x = 7$

$x = -\frac{7}{4}$ & $\frac{7}{4}$

18. $4x^2 - 35x = 9$

$-36 \mid -35$

$-36 \cdot 1$

$4x^2 - 35x - 9 = 0$

$4x^2 - 36x + x - 9 = 0$

$4x(x - 9) + 1(x - 9) = 0$

$(x - 9)(4x + 1) = 0$

$x = -\frac{1}{4}$ & 9

19. $7y^2 - 4y = 0$

$y(7y - 4) = 0$

$y = 0$ or $7y - 4 = 0$, $7y = 4$, $y = \frac{4}{7}$

$y = 0$ & $\frac{4}{7}$

20. $8x^2 + 2x - 3 = 0$

$-24 \mid 2$

$6 \cdot 4$

$8x^2 + 6x - 4x - 3$

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

$(4x + 3)(2x - 1) = 0$

$4x + 3 = 0$ $\quad 2x - 1 = 0$

$4x = -3$ $\quad 2x = 1$

$x = -\frac{3}{4}$ & $x = \frac{1}{2}$

21. $8x^2 - 10x = 0$

$2x(4x - 5) = 0$

$2x = 0$ $\quad 4x - 5 = 0$

$x = 0$ $\quad 4x = 5$

$x = \frac{5}{4}$

$x = 0$ & $\frac{5}{4}$

22. $-6x^2 = -26x + 20$

$0 = 6x^2 - 26x + 20$

$30 \mid -13$

$2(3x^2 - 13x + 10)$

$-10 \quad -3$

$2(3x^2 - 10x - 3x + 10)$

$x(3x - 10) - 1(3x - 10)$

$2(3x - 10)(x - 1) = 0$

$x = \frac{10}{3}$ & 1

23. $3x^2 - 21x + 30 = 0$

$120 \mid -21$

$3(x^2 - 7x + 10) = 0$

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

$x = 5, 2$

24. $4x^2 = -20x - 25$

$4x^2 + 20x + 25 = 0$

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

$2x + 5 = 0$

$2x = -5$

$x = -\frac{5}{2}$

25- 27: Write a quadratic equation, in standard form, that has the following roots.

25. $\{3/2, -4\}$

$y = (x - \frac{3}{2})(x + 4)$

$y = (2x - 3)(x + 4)$

$y = 2x^2 + 8x - 3x - 12$

$y = 2x^2 + 5x - 12$

26. $\{-8, -6\}$

$y = (x + 8)(x + 6)$

$y = x^2 + 14x + 48$

27. $\{-3/2, -1/2\}$

$y = (x + \frac{3}{2})(x + \frac{1}{2})$

$y = (2x + 3)(2x + 1)$

$y = 4x^2 + 2x + 6x + 3$

$y = 4x^2 + 8x + 3$