Honors Math II
Unit 4 day 5: completing the square

Name Key
Date_____ Period_____

Find the value of "c" that makes the expression a perfect square trinomial. Then write the expression as the square of a binomial.

1. $x^2 + 6x + c$

$c = 9$

$(x+3)^2$

2. $x^2 + 12x + c$

$c = 36$

$(x+6)^2$

3. $x^2 - 24x + c$

$c = 144$

$(x-12)^2$

4. $x^2 + 7x + c$

$c = \frac{49}{4}$

$(x + 7/2)^2$

5. $x^2 + 13x + c$

$c = \frac{169}{4}$

$\left(x + \frac{13}{2}\right)^2$

6. $x^2 - x + c$

$c = \frac{1}{4}$

$\left(x - \frac{1}{2}\right)^2$

Solve the following quadratics by completing the square.

7. $x^2 - 2x - 20 = 0$

$x = 1 \pm \sqrt{21}$

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

$x = 4 \pm \sqrt{26}$

9. $x^2 + 12x = -3$

$x = -6 \pm \sqrt{33}$

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

$x = -5 \pm 3\sqrt{2}$

11. $x^2 + 4x - 3 = 0$

$X = -2 \pm \sqrt{7}$

12. $x^2 + 14x + 5 = 0$

$X = -7 \pm 2\sqrt{11}$

13. $x^2 - 10x = -2$

$X = 5 \pm \sqrt{23}$

14. $x^2 - 6x - 20 = 0$

$X = 3 \pm \sqrt{29}$

15. $4x^2 + 8x = 5$

$x = 1/2$ or $-5/2$

16. $2x^2 + 12x = 18$

$X = -3 \pm 3\sqrt{2}$

17. $3x^2 - 12x - 12 = 0$

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

18. $2x^2 - 28x + 100 = 0$

$x = 7 \pm i$

Write in vertex form by completing the square.

19. $y = x^2 - 8x + 19$

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

20. $y = x^2 - 4x - 1$

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

21. $y = 5x^2 + 10x + 7$

$y = 5(x+1)^2 + 2$

22. $y = 2x^2 + 24x + 25$

$y = 2(x+6)^2 - 47$

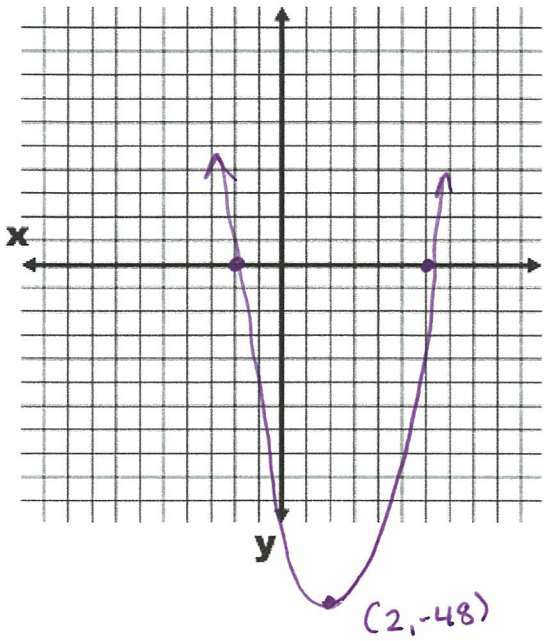
Graph the following equations.

23. $f(x) = 3x^2 - 12x - 36$

x-intercept(s): (6,0) (-2,0)

y-intercept: (0,-36)

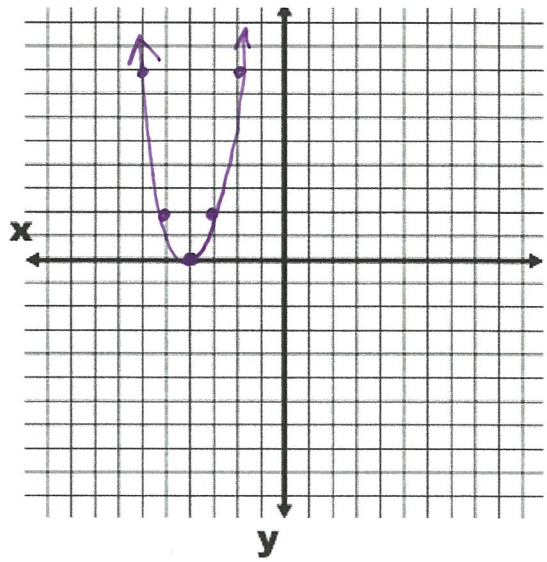
Not to scale



24. $f(x) = 2x^2 + 16x + 32$

x-intercept(s): (-4,0)

y-intercept: (0,32)



check answers with the "quick check" method

Factor the following completely.

25. $8x^2 - 12x$

26. $4x^3 - 9x$

27. $-x^2 + 5x$

28. $4x^3 + 100x^2 + 96x$

29. $6x^2 + 28x - 10$

30. $-2x^3 - 10x^2 - 12x$