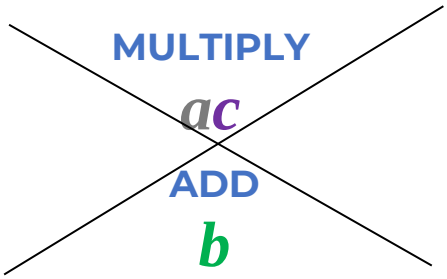
SAT Intermediate 7/17-7/19

Factored Form	Work	Trinomial
$(3x + 2)(2x - 4)$	$6x^2 - 12x + 4x - 8$	$6x^2 - 8x - 8$
$(5x - 3)(6x + 2)$	$30x^2 + 10x - 18x - 6$	$30x^2 - 8x - 6$
$(2x - 3)(x - 5)$	$2x^2 - 10x - 3x + 15$	$2x^2 - 13x + 15$

6. Factoring "a>1" Trinomials

$$ax^2+bx+c=(x+\square)(x+\square)$$

$$\square\times\square=ac, \qquad \square+\square=b$$



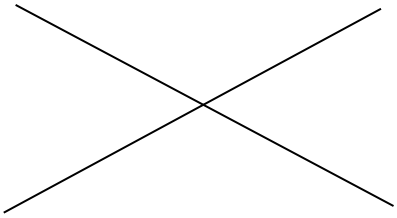
Method

1. Write down two pairs of parentheses.
2. Determine the factors of ac.
3. Find the combination of factors that will add/subtract to equal b. let them be m&n.
4. Rewrite the trinomial as

$$ax^2+mx+nx+c$$

5. Group them into (two)+(two) as $(ax^2+mx)+(+nx+c)$. Factor out the GCF from each group.
6. Place the values into the parentheses
7. Check using FOIL.

Example : Factor $3x^2-13x-10$



Factoring Trinomials (a>1) In-Class Practice

Factor each expression below using all the techniques we learned so far:

1. $2x^2 + 7x + 6$	**2.** $3x^2 - 14x - 24$
3. $5x^2 - 22x + 21$	**4.** $4x^2 + 18x + 8$
5. $2x^2 - 8x + 6$	**6.** $6x^2 + 13x - 28$
7. $4x^2 - 4x + 1$	**8.** $x^2 + 6x + 9$
9. $16x^2 - 40x + 25$	**10.** $9x^2 - 36x + 36$

Factoring Trinomials (a>1) Homework - Page 13

Factor Completely.

1) $7m^2 + 6m - 1$

2) $3k^2 - 10k + 7$

3) $5x^2 - 36x - 81$

4) $2x^2 - 9x - 81$

5) $3n^2 - 16n + 20$

6) $2r^2 + 7r - 30$

7) $5k^2 + 8k + 80$

8) $5x^2 - 14x + 8$

9) $7p^2 - 20p + 12$

10) $3v^2 + 14v - 49$

11) $7x^2 - 26x - 45$

12) $5p^2 - 52p + 20$

13) $5x^2 - 43x + 24$

14) $5x^2 + 26x + 24$

15) $3r^2 + 40r + 100$

16) $2x^2 - 3x - 5$

17) $5p^2 + 19p + 12$

18) $2m^2 + 3m - 27$

19) $3n^2 + 10n - 8$

20) $2a^2 + 7a - 7$

Answers

1) $(7m - 1)(m + 1)$
2) $(3k - 7)(k - 1)$
3) $(5x + 9)(x - 9)$
4) $(2x + 9)(x - 9)$
5) $(3n - 10)(n - 2)$
6) $(2r - 5)(r + 6)$
7) Not factorable
8) $(5x - 4)(x - 2)$
9) $(7p - 6)(p - 2)$
10) $(3v - 7)(v + 7)$
11) $(7x + 9)(x - 5)$
12) $(5p - 2)(p - 10)$
13) $(5x - 3)(x - 8)$
14) $(5x + 6)(x + 4)$
15) $(3r + 10)(r + 10)$
16) $(2x - 5)(x + 1)$
17) $(5p + 4)(p + 3)$
18) $(2m + 9)(m - 3)$
19) $(3n - 2)(n + 4)$
20) Not factorable

Name: _____

Solving Quadratic using factoring

Solve quadratics using the factoring method.

Steps

1.Rearrange the terms to set up the equation in the standard form.

$ax^2 + bx + c = 0$

2. factor the left side.

$(x-m)(x-n) = 0$

3. Set the terms inside each parenthesis equal to 0.

$(x-m)=0$, $(x-n) = 0$

$x=m$ $x=n$

4. Plug in the solution(s) to the original equation and check your answer(s)!

Factoring Method 1. Solve for x using a=1 factoring method.

EXAMPLE

$x^2 + 13x = 30$

PRACTICE

1. $x^2 + 4x - 5=0$	**2.** $x^2 + 13x = 42$
3. $-x^2 - x + 12=0$	**4.** $x^2 - 8x = -16$
5. $-x^2 + 16x = 55$	**6.** $x^2 = 8x - 12$

Factoring Method 2. Solve for x using GCF & a=1 factoring method.

Example

$-2x^2 + 4x = 30$

Practice

7. $3x^2 + 15x + 12 = 0$	***8.*** $9x^2 - 36x = -27$
9. $6x^2 + 12x = 48$	***10.*** $-3x^2 - 3x = -60$

Factoring Method 3. Solve for x using a>1 factoring method.

Example

$2x^2 - 5x = 3$

Practice

11. $2x^2 - 6x - 8 = 0$	***12.*** $6x^2 + 7x = 5$
13. $-2x^2 - 3x + 2 = 0$	***14.*** $3x^2 - 5x = 2$

Factoring Method 4. Solve for x binomial factoring method.

Example

$x^2 - 4 = 0$

$x^2 - 4x = 0$

Practice

15. $x^2 - 9 = 0$	**16.** $4x^2 - 9 = 0$
17. $x^2 = 16$	**18.** $-9x^2 + 1 = 0$
19. $x^3 - 4x = 0$	**20.** $x^4 - 4x^2 = 0$
21. $x^3 - 3x^2 = 0$	**22.** $2x^2 - 10x = 0$

Mixed Review Practice

Factor each expression below:

23. $2x^2 + 7x + 6 = 0$

24. $3x^2 - 14x - 24 = 0$

25. $5x^2 - 22x + 21 = 0$

26. $4x^2 + 18x + 8 = 0$

27. $2x^2 - 8x + 6 = 0$

28. $6x^2 + 13x - 28 = 0$

29. $4x^2 - 4x + 1 = 0$

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

31. $4x^2 - 16 = 0$

32. $9x^2 - 4 = 0$

33. $16x^2 - 40x + 25 = 0$

34. $x^2 - 25 = 0$

35. $9x^2 - 36x + 36 = 0$

36. $18x^2 = -9x$

37. $4x^2 + 24x + 36 = 0$

Quadratics by Factoring Homework page 18-19

Solve each equation by factoring. Check your answers.

1. $x^2 - x - 30 = 0$

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

3. $x^2 = -10x - 9$

4. $x^2 - 5x = 0$

5. $10x - 24 = x^2$

6. $x^2 = -12x$

7. $-y^2 + 17y = 72$

8. $x^2 + 7x + 12 = 0$

9. $x^2 = 8x - 12$

10. $3x^2 + 15x + 12 = 0$

11. $-9x^2 + 6x = 0$

12. $6x^2 + 12x = 48$

13. $3x^2 = -3x + 60$

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

15. $7x^2 - 14x = 56$

16. $2x^2 + 7x = -6$

17. $4x^2 = 16$

18. $5x^2 - 22x + 21 = 0$

19. $4x^2 + 18x = -8$

20. $2x^2 - 8x + 6 = 0$

21. $6x^2 + 13x - 28 = 0$

22. $9x^2 = 4$

23. $16x^2 - 40x + 25 = 0$

24. $x^2 - 25 = 0$

Algebra II
Graphing Quadratics

Name:_____
Date: _____Pd: ____

Notes on **How to graph** a function on TI-84

First, click on _____ button to put in the function. Then click on _____ button to graph.
After checking the graph,

- find the vertex by clicking on either _____ or _____ button. Then, _____.
- Find the x-intercept by clicking on _____ button. Then, _____.
- Find the y-intercept by clicking on _____ button. Then, _____.

How to find the domain?

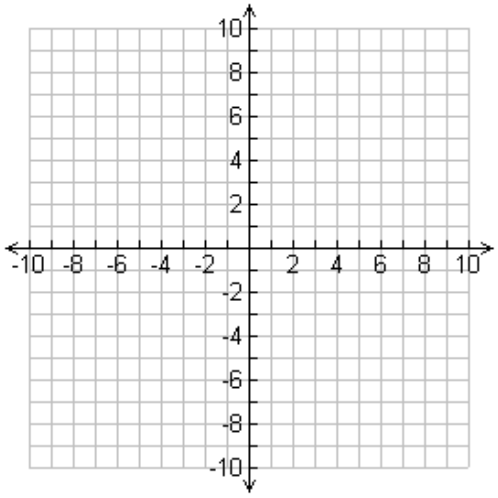
How to find the range?

How to find the increasing interval?

How to find the decreasing interval?

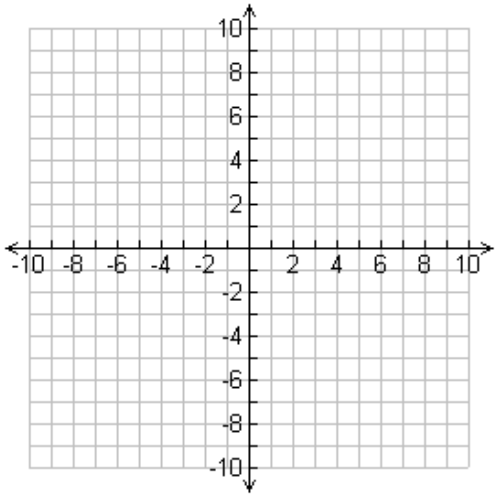
EXAMPLE Graph and answer the following.

1.) $y = (x-3)^2 - 4$



Vertex: _____
x-intercept: _____
y-intercept: _____
Domain: _____
Range: _____
Increasing: _____
Decreasing: _____

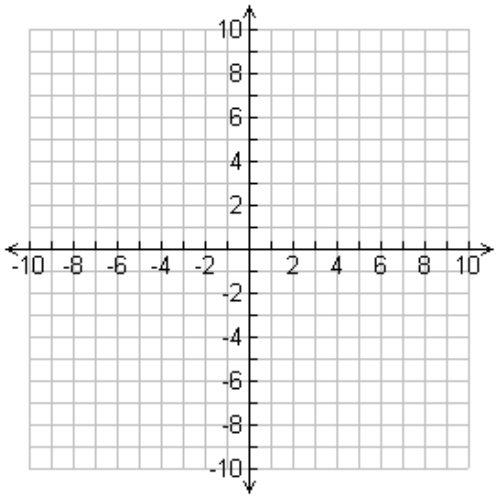
2.) $y = x^2 + 6x + 7$



Vertex: _____
x-intercept: _____
y-intercept: _____
Domain: _____
Range: _____
Increasing: _____
Decreasing: _____

PRACTICE

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



Vertex: _____

x-intercept: _____

y-intercept: _____

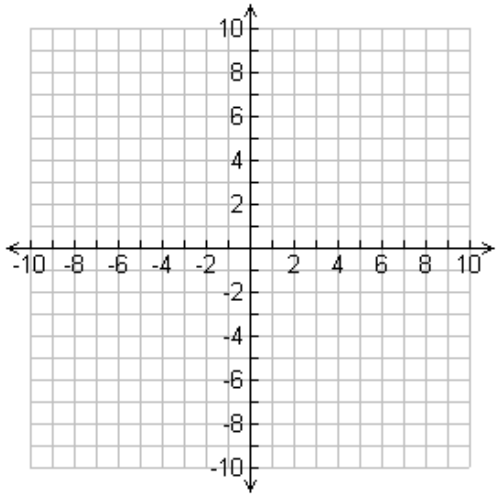
Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

4.) $y = -3x^2 - 12x - 6$



Vertex: _____

x-intercept: _____

y-intercept: _____

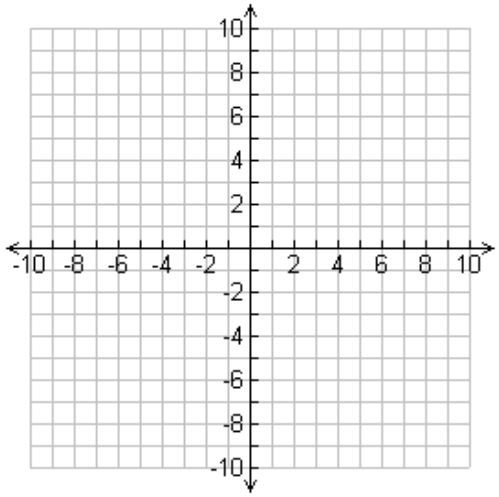
Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

5.) $y = -\frac{1}{2}(x-4)^2 + 2$



Vertex: _____

x-intercept: _____

y-intercept: _____

Domain: _____

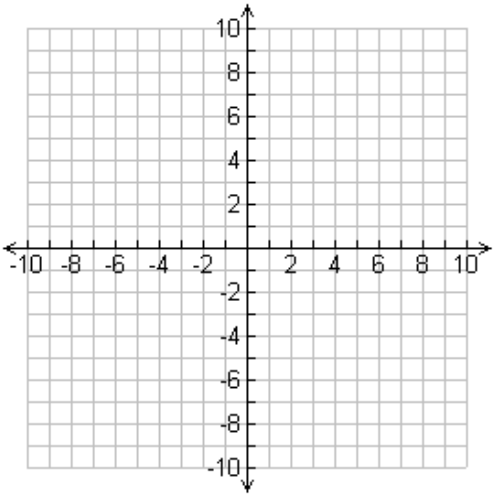
Range: _____

Increasing: _____

Decreasing: _____

Graphing Quadratics Homework page 22-23

1) $y = -x^2 - 4x - 3$



Vertex: _____

x-intercept: _____

y-intercept: _____

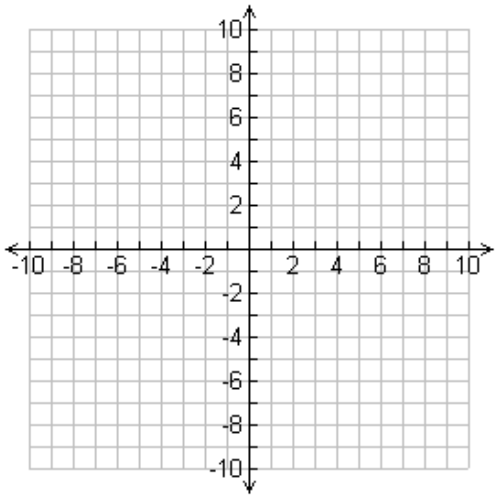
Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

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



Vertex: _____

x-intercept: _____

y-intercept: _____

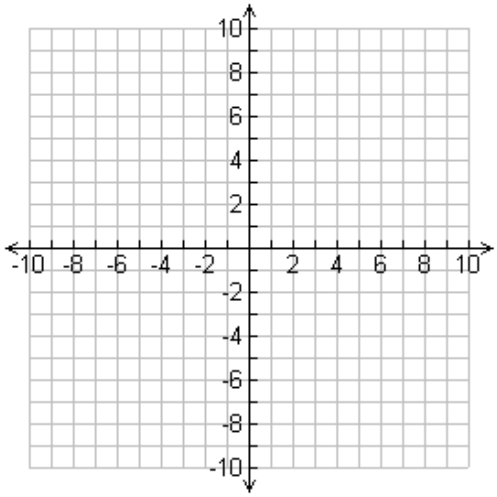
Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

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



Vertex: _____

x-intercept: _____

y-intercept: _____

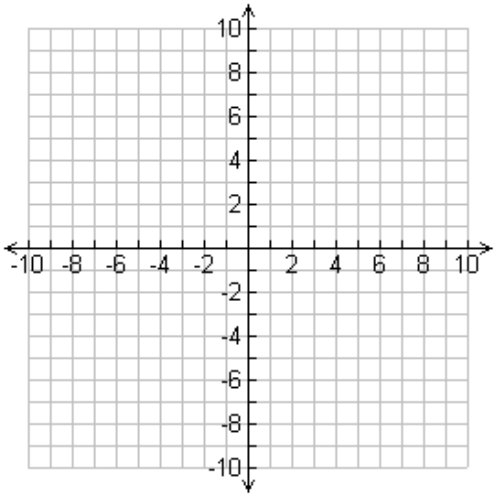
Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

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



Vertex: _____

x-intercept: _____

y-intercept: _____

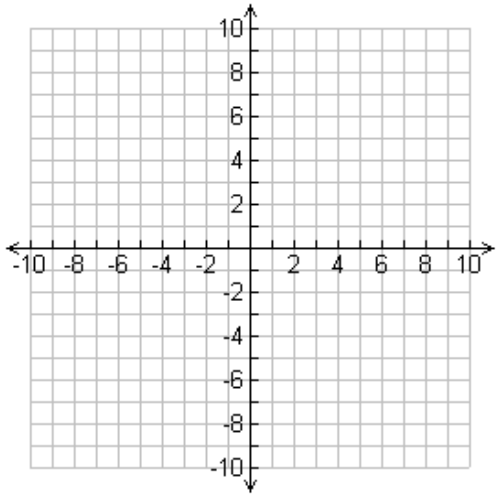
Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

5) $y = \frac{1}{2}(x-1)^2 - 4$



Vertex: _____

x-intercept: _____

y-intercept: _____

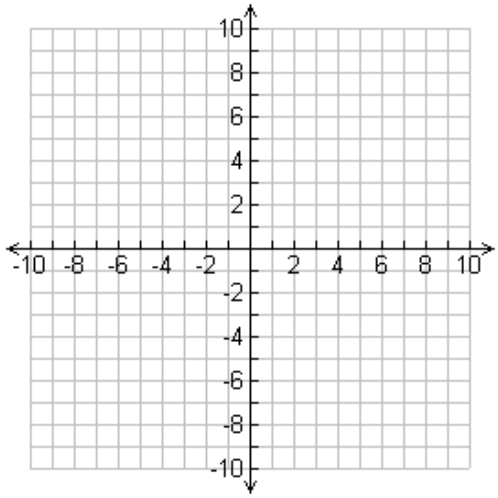
Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

6) $y = (x-2)(x-4)$



Vertex: _____

x-intercept: _____

y-intercept: _____

Domain: _____

Range: _____

Increasing: _____

Decreasing: _____