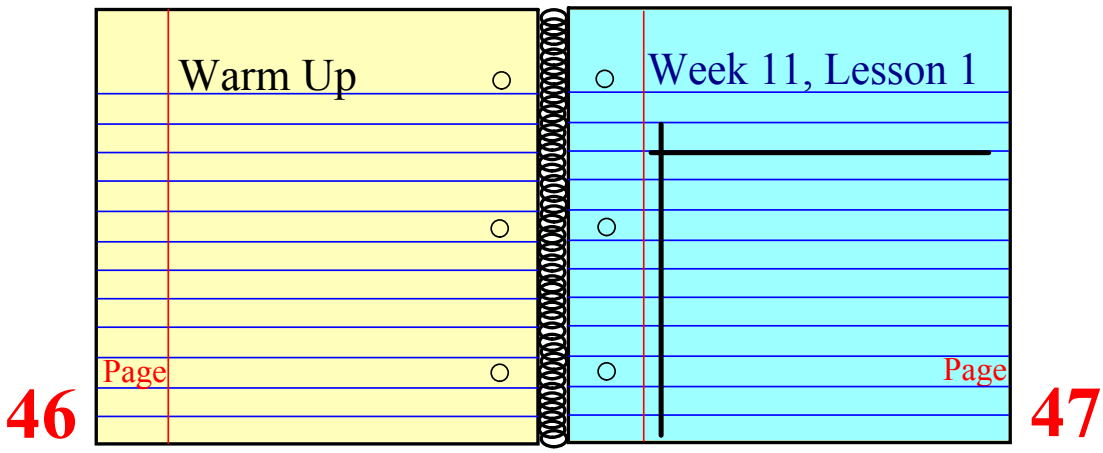

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

EQ: Can I solve quadratic with inverse operations? (A-REI.4b)

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-

Warm-up: Complete the chart.

Sum	-9	-1	7	5	6
Number 1	-7	-2	-3	7	4
Number 2	-2	1	10	-2	2
Product	14	-2	-30	-14	8

+ −
1 2

+ −
7 2

Notes Notes

Solving Quadratics with Inverse

(A-REI.4b)

Quadratic Equation: A polynomial with a degree of 2.

$3x^2+4=6$

Inverse Operations:

- The inverse of addition is Subtraction (and vice versa).
- The inverse of multiplication is division (and vice versa).
- The inverse of a square root is Squaring (and vice versa).

An exponent of 2 and a square root cancel each other out.

$\square^2$ $\sqrt{\ }$

For example: $\sqrt{4^2}$ $\sqrt{16}$ 4 or $(\sqrt{9})^2$ 3^2 9

Examples:

$4x^2-12=4$

$+12 \quad +12$

$\frac{4x^2}{4}=\frac{16}{4}$

$\sqrt{x^2}=\sqrt{4}$

$x=\pm 2$

$3x^2-15=12$

$+15 \quad +15$

$\frac{3x^2}{3}=\frac{27}{3}$

$\sqrt{x^2}=\sqrt{9}$

$x=\pm 3$

$9x^2-6=19$

$+6 \quad +6$

$\frac{9x^2}{9}=\frac{25}{9}$

$\sqrt{x^2}=\sqrt{\frac{25}{9}}$

$x=\pm\frac{5}{3}$

$\frac{196x^2}{196}=\frac{36}{196}$

$\sqrt{x^2}=\sqrt{\frac{36}{196}}$

$x=\pm\frac{6}{14}$ $2\cdot 3$ $2\cdot 7$

$x=\pm\frac{3}{7}$

Summary:

ICA: Solve the equations.

1. $2x^2 - 20 = 52$

2. $8x^2 - 20 = 12$

3. $3x^2 - 81 = 0$

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

5. $25x^2 - 169 = 0$

6. $64x^2 = 9$

ICA: Spiral Review

1. $\left(4x^2-3x+8\right)+\left(2x^2+5x-2\right)$

2. $\left(6x^2+7x-4\right)-\left(x^2+3x-6\right)$

3. $\left(2x+3\right)\left(3x+1\right)$

4. $\left(-2x+3\right)\left(4x^2-x-5\right)$

1, 2, 5, 5, 6, 7, 9, 12, 12, 13, 15, 31

5. Find the mean.

6. Find the median.

7. Find the mode.

8. Find the range.

9. Is there an outlier? If so, what is it?

10. How did the outlier affect the mean?

11. How did the outlier affect the standard deviation?

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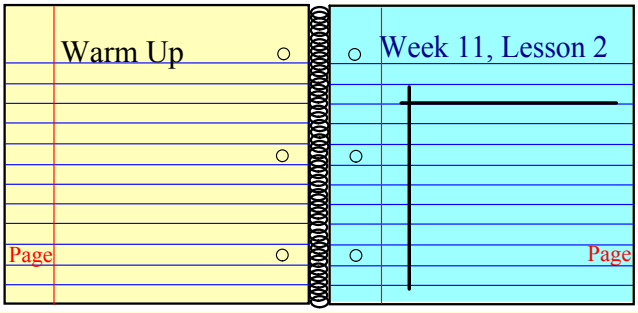
Write a summary on your notes.



Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

EQ: Can I factor quadratics to reveal the zeros? (A-SSE.3a)

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-u

Warm-up: Answer the following questions.

1. $(x+4)(x+2)$

$x^2+2x+4x+8$

x^2+6x+8

2. $(x+6)(x-3)$

$x^2-3x+6x-18$

$x^2+3x-18$

3. $(x-1)(x-5)$

$x^2-5x-1x+5$

x^2-6x+5

4.

Sum	4	-6	-3	-1	-7
Number 1	-3	-3	-5	-2	-3
Number 2	7	-3	2	1	-4
Product	-21	9	-10	-2	12

+ − | − − | + − | − + | − −

~~−21~~ 3·7 | ~~1·9~~ 3·3 | ~~+10~~ 2·5 | −1·2 | ~~−12~~ ~~2·6~~ 3·4

5. $81x^2 - 14 = 50$

$+14 \quad +14$

$\frac{81x^2}{81} = \frac{64}{81}$

$\sqrt{x^2} = \sqrt{\frac{64}{81}}$

$x = \pm\frac{8}{9}$

6. $121x^2 = 25$

$\frac{121}{121} \quad \frac{121}{121}$

$\sqrt{x^2} = \sqrt{\frac{25}{121}}$

$x = \pm\frac{5}{11}$

Notes Notes

Factoring Quadratics

A-SSE.3a

Review of multiplying binomials:

$(x+4)(x+5)$

$x^2 + 5x + 4x + 20$

$x^2 + 9x + 20$

	x	5
x	x^2	$5x$
4	$4x$	20

$x^2 + 9x + 20$

Factoring is just working backwards...

Examples:

$x^2 + 5x + 6$

Sum Product

$(x+2)(x+3)$

5
2
3
6

$+6$ $2 \cdot 3$

$x^2 + 3x - 18$

	x	$+6$
x	x^2	$+6x$
-3	$-3x$	-18

$3x$

$+18$ $2 \cdot 9$ $3 \cdot 6$

$(x-3)(x+6)$

$x^2 - 6x + 8$

Sum Product

$(x-2)(x-4)$

-6
-2
-4
8

-6 -8 $-1 \cdot 8$ $2 \cdot 4$

$x^2 - 2x - 24$

	x	-6
x	x^2	$-6x$
$+4$	$+4x$	-24

$-2x$

$\pm 1 \cdot 24$ $2 \cdot 12$ $3 \cdot 8$ $4 \cdot 6$

$(x-6)(x+4)$

Summary:

ICA: Factor the following quadratics

1. $x^2 - 5x + 4$

2. $x^2 - 9x + 14$

3. $x^2 + 7x + 10$

4. $x^2 + x - 30$

5. $x^2 + 5x - 24$

6. $x^2 - 3x - 18$

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

8. $x^2 + 8x + 12$

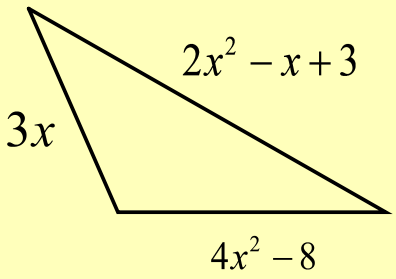
9. $3x^2 - 16x + 5$

10. $2x^2 + 7x + 3$

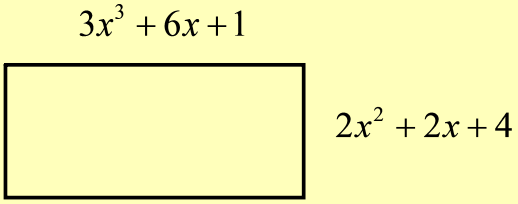
11. $6x^2 + 7x + 2$

ICA:

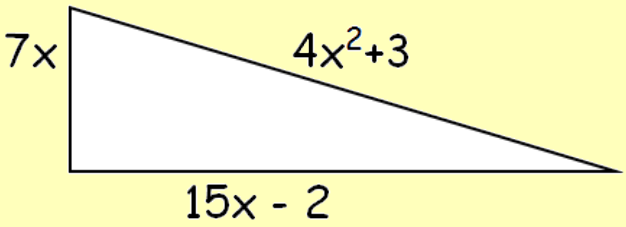
Write an expression that represents the perimeter of this triangle.



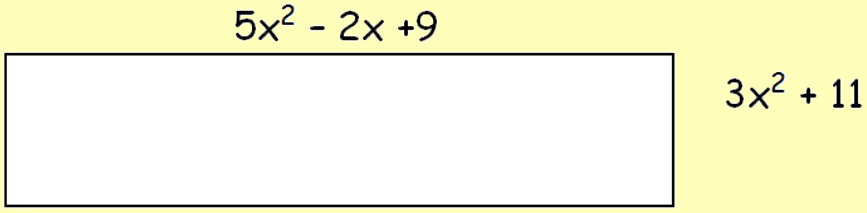
Write an expression for the perimeter of the rectangle.



6. Write an expression that represents the perimeter of this triangle.



7. Find the perimeter of the rectangle



ICA:

ADDING AND SUBTRACTING POLYNOMIALS **Find the sum or difference.**

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

$(x + 7) - (2x + 4)$

$(4x^5 - 3x^2 + 8) - (2x^5 + 2x^2 - 1)$

$(2x^3 - 4x^2 + 3x - 7) - (3x^3 + x^2 - 5x - 2)$

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Write a summary on your notes.

Warm Up — Page 50

Week 11, Lesson 3 — Page 51

Essential Question

EQ: Can I factor quadratics to reveal the zeros? (A-SSE.3a)

Warm-up

Warm-up: Factor

1. $x^2 + 7x + 10$

Sum Pro

7
2
5
10

$(x+2)(x+5)$

~~± 1·10~~
± 2·5

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

Sum Pro

-4
-5
1
-5

$(x-5)(x+1)$

$(x+1)(x-5)$

∓ 1·5

3. $x^2 - 8x + 12$

Sum Pro

-8
-2
-6
12

$(x-2)(x-6)$

or

$(x-6)(x-2)$

= ~~1·12~~
2·6
~~3·4~~

4. $x^2 + 5x - 14$

Sum Pro

5
7
-2
-14

$(x+7)(x-2)$

or

$(x-2)(x+7)$

± 1·14
2·7

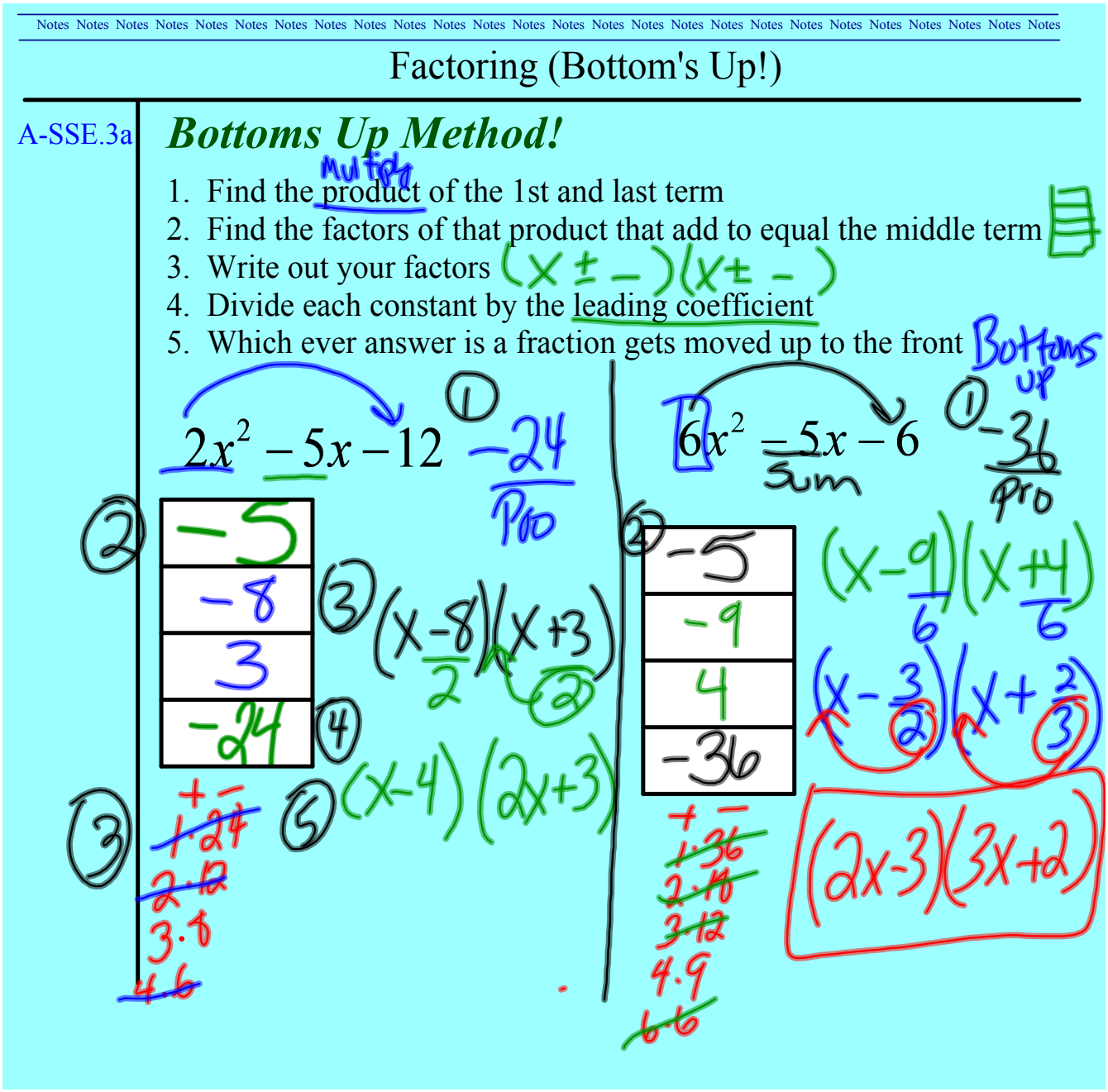
Notes Notes

Factoring (Bottom's Up!)

A-SSE.3a

Bottoms Up Method!

1. Find the product (multiply) of the 1st and last term
2. Find the factors of that product that add to equal the middle term
3. Write out your factors $(x \pm \_)(x \pm \_)$
4. Divide each constant by the leading coefficient
5. Which ever answer is a fraction gets moved up to the front (Bottoms up)



ICA: Factor

1. $2n^2 + 5n + 2$

2. $8x^2 + 14x + 3$

3. $n^2 - 11n + 10$

4. $n^2 + 4n - 12$

5. $6x^2 - x - 2$

6. $5x^2 - 18x + 9$

7. $n^2 + 6n + 8$

8. $a^2 - a - 90$

9. $4n^2 - 17n + 4$

10. $5n^2 + 19n + 12$

11. $2n^2 + 3n - 9$

12. $3p^2 - 2p - 5$

13. $3n^2 - 8n + 4$

14. $2v^2 + 11v + 5$

$2n^2 + 5n + 2$

4
Pop

5
1
4
4

+ +
1 · 4
2 · 2

$(n+1)\left(n+\frac{4}{2}\right)$

$(2n+1)(n+2)$

$8x^2 + 14x + 3$

Sum: 14 — Pro: 24

14
2
12
24

+ +

1 · 24
2 · 12
3 · 8
4 · 6

$(x + \frac{2}{8})(x + \frac{12}{8})$

$\div 2 \quad \div 4$

$(x + \frac{1}{4})(x + \frac{3}{2})$

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

ICA:

Expand the following expression $(5x^2)(2x+4)$

Expand the following expression $(4x-3)(5x+8)$.

Expand the following expression $(2x+4)^2$.

Expand the following expression
$(3y-8)(y^2+3y-5)$.

Expand the following expression
$(3t^2+4t-6)(2t^2-6t+3)$.

Look at the following data set: $\{4, 12, 9, 21, 18, 45, 6, 17\}$

1. Determine the outlier.

2. How does the outlier affect the mean?

What is the mean?

3. How does the outlier affect the median?

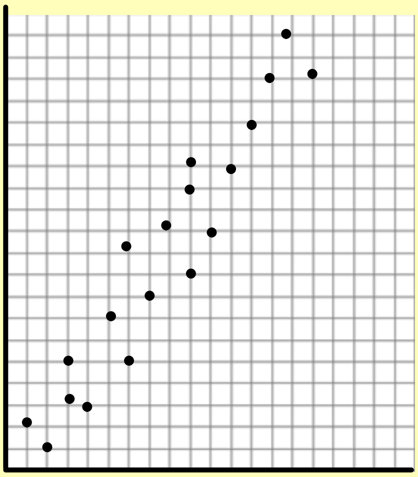
What is the median?

4. How does the outlier affect the standard deviation?

ALG 2 - Week 11

What type of correlation is there?

1)



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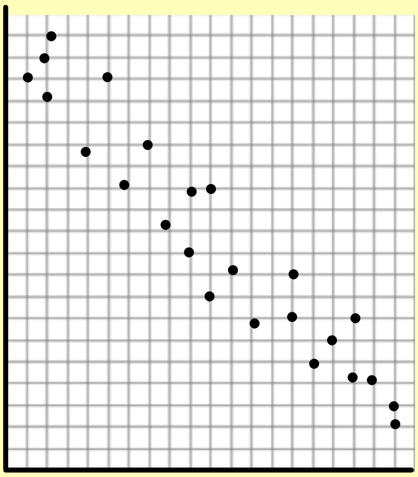
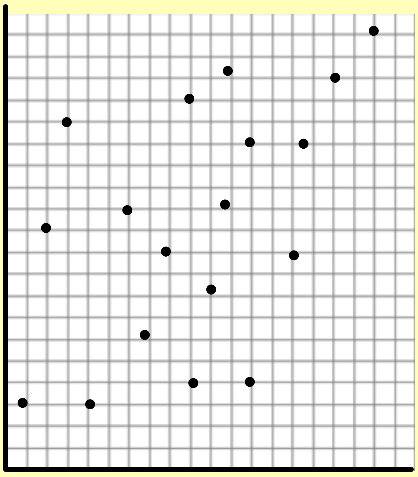


3)



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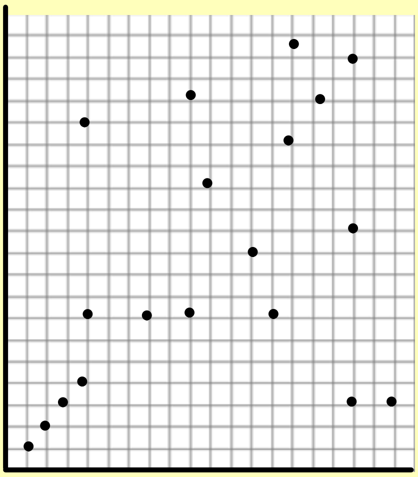
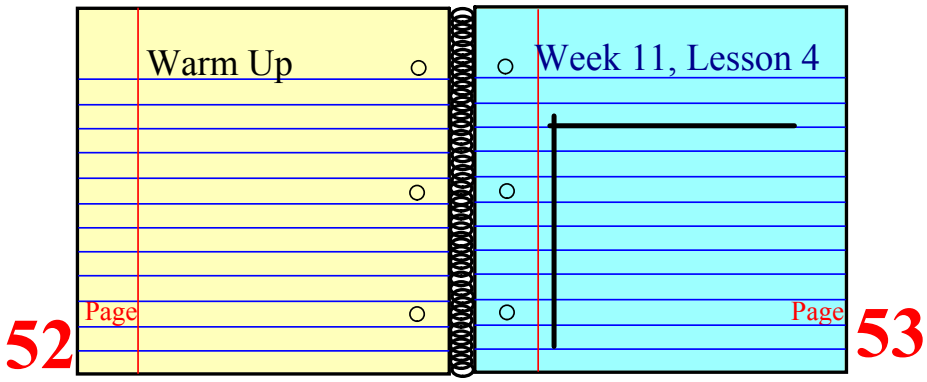




Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

EQ: Can I factor quadratics to reveal the zeros and sketch a graph? (A-SSE.3a)

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

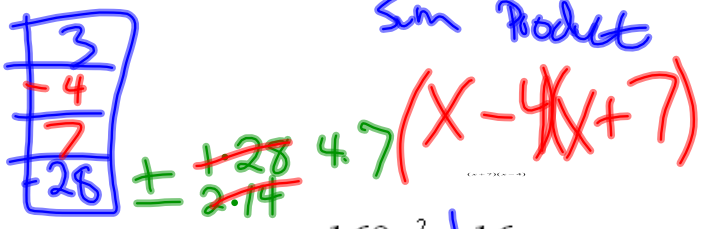
Warm Up:

QUIZ!

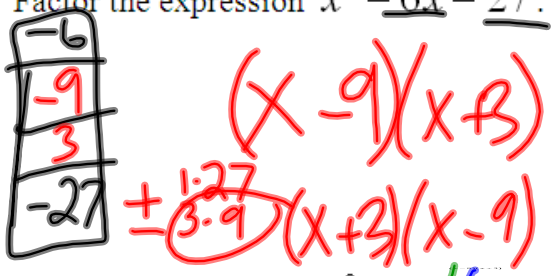
ALG 2 - Week 11 Checkpoint Quiz.docx

Quiz Answers:

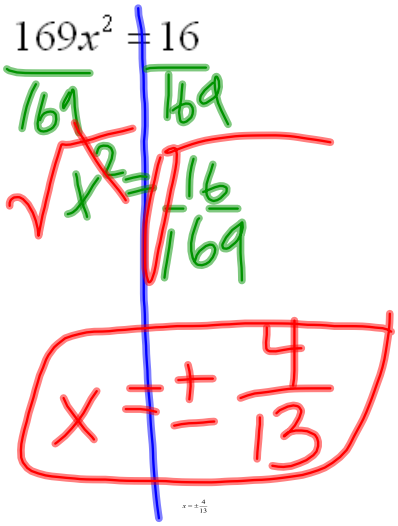
1. Factor the expression $x^2 + 3x - 28$.



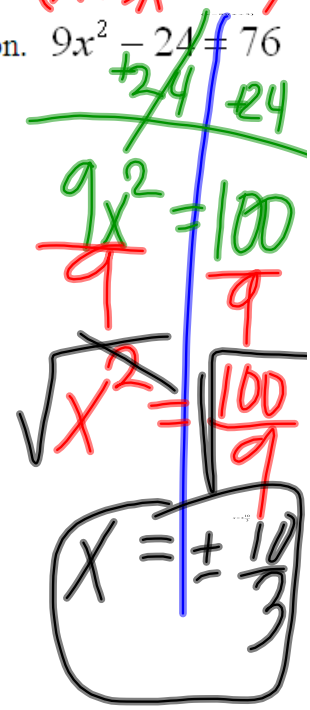
2. Factor the expression $x^2 - 6x - 27$.



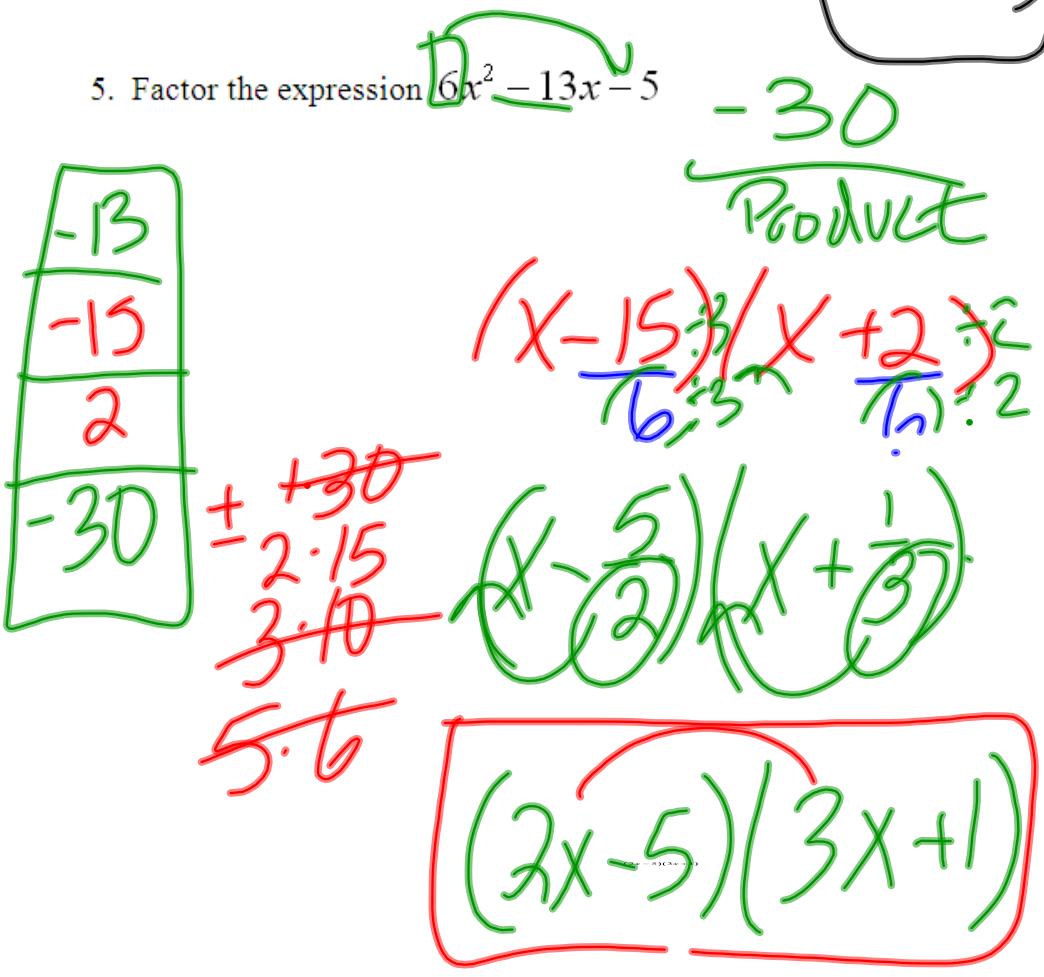
3. Solve the equation. $169x^2 = 16$



4. Solve the equation. $9x^2 - 24 = 76$



5. Factor the expression $6x^2 - 13x - 5$



ALG 2 - Week 11

Notes Notes

Finding Zeroes of Quadratics

A-SSE.3a

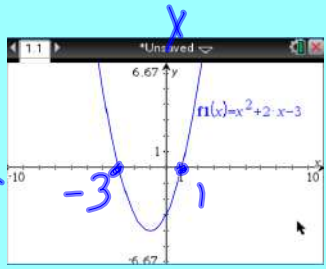
1. Factor the following expression:

$x^2 + 2x - 3$

Sum: 2, −1 | Product: 3, −3

± 1.3

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



2. On your calculator, graph the function.

3. Sketch a picture of the graph.

$x-1=0$ → $+1 \quad +1$ → $x=1$

$x+3=0$ → $-3 \quad -3$ → $x=-3$

***What do you notice is similar between the factors and the graph??

Examples: Find the zeroes of the following expressions.

$x^2 - 5x - 14$

Sum: −5 | Product: −14

1) Factor: −7, 2

$(x-7)(x+2)$

$x-7=0$ → $+7 \quad +7$ → $x=7$

$x+2=0$ → $-2 \quad -2$ → $x=-2$

$x=-2, 7$

$4x^2 - 8x - 5$

Sum: −8 | Product: −20

−10, 2

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

$\frac{4}{2} \quad \frac{2}{2}$

$(x-5)(x+\frac{1}{2})$

$(2x-5)(2x+1)$

Factor

$2x-5=0$ → $+5 \quad +5$ → $\frac{2x}{2} = \frac{5}{2}$ → $x=\frac{5}{2}$

$2x+1=0$ → $-1 \quad -1$ → $\frac{2x}{2} = \frac{-1}{2}$ → $x=-\frac{1}{2}$

Odd case: $2x^2 + 8x + 8$

$\frac{2}{2} \quad \frac{8}{2} \quad \frac{8}{2}$

$2(x^2+4x+4)$

4, 2, 2 | 1.4, 2.2

$2(x+2)(x+2)$

$x+2=0$ → $-2 \quad -2$ → $x=-2$

ICA:

1. What are the zeroes?

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

2. What are the zeroes?

$6x^2+5x-4=0$

3. Factor the expression.

$x^2+5x-24$

Explain how to use those factors to find the zeroes.

4. Solve the quadratic.

$6x^2-20x-16=0$

5. Solve the quadratic.

$100x^2=49$

6. Solve the quadratic.

$x^2-12=-4x$

7. Solve the quadratic.

$25x^2-81=0$

8. Solve the quadratic.

$2x^2+16x+32=0$

ICA:

1. What operation always joins a variable and its coefficient in an algebraic expression?

2. Classify each of the following as a monomial, binomial or a trinomial.

a. $x+1$

b. $5-x^2$

c. x^2-x-1

d. $2x$

3. Explain the meaning of the exponent 2 in the algebraic expression $(3x+y)^2$.

4. Describe the error Kate made when simplifying the expression shown. $2(5x+6)=10x+6$

Attachments

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