

Are there any questions from the assigned work that you would like to see on the board?

Unit Review work: pp. 132-133 #1, 4ac, 6c, 7, 8, 9ab, 10bde, 12ac, 13bc, 14cd, 15ce
 p. 134 #1 - 3, 5 - 8 [4, 9]

p. 132

6. Simplify.

- a) $(2x^4 - 3x^2 - 6) + (6x^4 - x^3 + 4x^2 + 5)$
- b) $(x^2 - 4)(2x^2 + 5x - 2)$
- c) $-7x(x^2 + x - 1) - 3x(2x^2 - 5x + 6)$
- d) $-2x^2(3x^3 - 7x + 2) - x^3(5x^3 + 2x - 8)$
- e) $-2x[5x - (2x - 7)] + 6x[3x - (1 + 2x)]$
- f) $(x + 2)^2(x - 1)^2 - (x - 4)^2(x + 4)^2$
- g) $(x^2 + 5x - 3)^2$

$$\begin{aligned}
 &= (x^2 + 5x - 3)(x^2 + 5x - 3) \\
 &= x^4 + 5x^3 - 3x^2 + 5x^3 + 25x^2 - 15x - 3x^2 - 15x + 9 \\
 &= x^4 + 10x^3 + 19x^2 - 30x + 9
 \end{aligned}$$

$$f) (x+2)^2(x-1)^2 - (x-4)^2(x+4)^2$$

$$= (x^2 + 4x + 4)(x^2 - 2x + 1) - (x^2 - 8x + 16)(x^2 + 8x + 16)$$

$$= x^4 - 2x^3 + x^2 + 4x^3 - 8x^2 + 4x + 4x^2 - 8x + 4 - [x^4 + 8x^3 + 16x^2 - 8x^3 - 64x^2 - 128x + 16x^2 + 128x + 256]$$

$$= x^4 + 2x^3 - 3x^2 - 4x + 4 - [x^4 + 0x^3 - 32x^2 + 0x + 256]$$

$$= x^4 + 2x^3 - 3x^2 - 4x + 4 - x^4 + 32x^2 - 256$$

$$= 0x^4 + 2x^3 + 29x^2 - 4x - 252$$

$$= 2x^3 + 29x^2 - 4x - 252$$

c
f *6*

p. 133

12. Simplify. State any restrictions on the variables.

- a) $\frac{6x}{24xy} \times \frac{2y}{3x} = \frac{1}{2}y$ R: $x \neq 0, y \neq 0$
- b) $\frac{10m^2}{3n} \times \frac{6mn}{20m^2} = \frac{2}{3}n$
- c) $\frac{2ab}{5bc} \div \frac{6ac}{10b} = \frac{2b}{3c^2}$ R: $a \neq 0, b \neq 0, c \neq 0$

$$\frac{2ab}{5bc} \times \frac{10b}{6ac} = \frac{2b}{3c^2}$$

R: $a \neq 0$
 $b \neq 0$
 $c \neq 0$

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 p. 134 #1-3, 5-8 [4, 9]

$\frac{c}{f} \quad 6$

p. 133 #13

c) $\frac{1-x^2}{1+y} \times \frac{1-y^2}{x+x^2} \div \frac{y^3-y}{x^2}$ p. 133 #14

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

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

$$= \frac{-1(1-x)x}{y(1+y)} \quad R: y \neq 1, 0, 1$$

$$x \neq 0, -1$$

c) $\frac{1}{x^2+3x-4} + \frac{1}{x^2+x-12}$

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

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

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

p. 133 #15

e) $\frac{(x-2y)^2}{x^2-y^2} \div \frac{(x-2y)(x+3y)}{(x+y)^2}$

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

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

$$R: x \neq y, -3y, -y, 2y$$

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

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

$$R: x \neq 1, 3, -4$$

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 p. 134 #1 - 3, 5 - 8 [4, 9]

f ^c 6

p. 134

5. Factor.

a) $3m(m - 1) + 2m(1 - m)$

b) $x^2 - 27x + 72$

c) $15x^2 - 7xy - 2y^2$

d) $(2x - y + 1)^2 - (x - y - 2)^2$

e) $5xy - 10x - 3y + 6$

f) $p^2 - m^2 + 6m - 9$

$\rightarrow 5x(y-2) - 3(y-2)$

$= p^2 - (m^2 - 6m + 9)$ $= (y-2)(5x-3)$

$= p^2 - (m-3)^2$

$= (p - (m-3))(p + (m-3))$

$= (p - m + 3)(p + m - 3)$

6. Use factoring to determine the x-intercepts of the curve

$y = x^3 - 4x^2 - x + 4.$

$= x^2(x-4) - 1(x-4)$

$= (x-4)(x^2-1)$

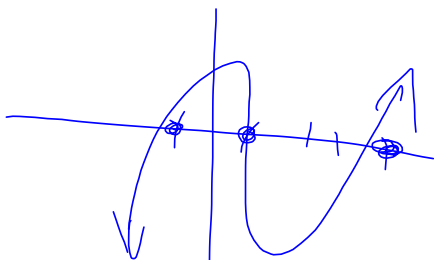
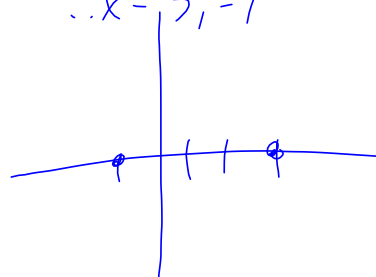
$= (x-4)(x-1)(x+1)$

\therefore Zeros: 4, -1, 1

$y = x^2 - 2x - 3$

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

$\therefore x = 3, -1$



***READ the "Invesgate " on pp. 4-5 #A - K**

(I've done the scaer plots for you on the next slides.)

Today's Learning Goal(s):

Date: _____
(Every lesson)

By the end of the class, I will be able to:

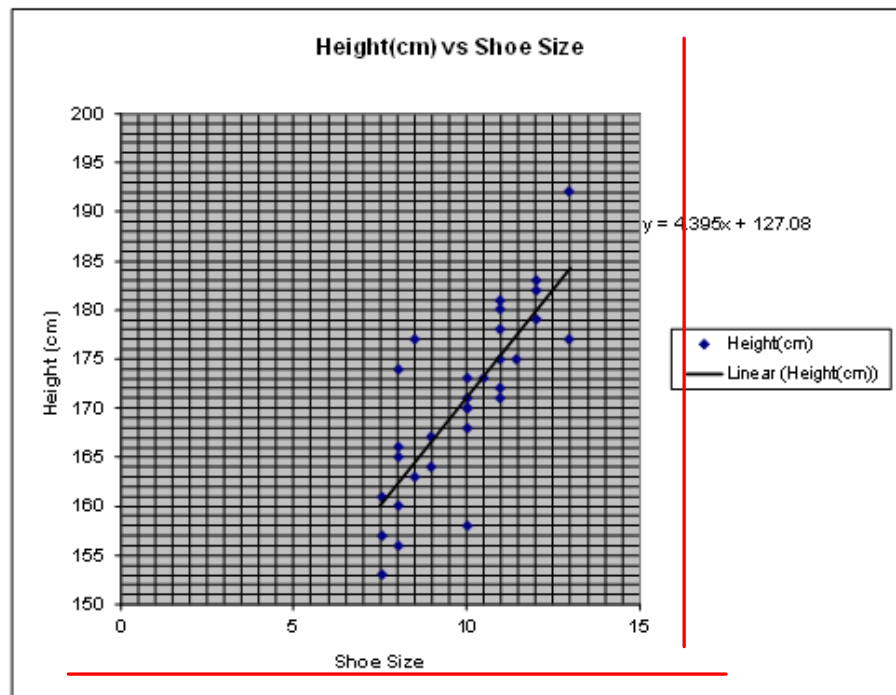
- a) recognize functions in various representations .
- b) determine the domain and range for a relation .
- c) determine if a relation is a function .

(Use **this scatter plot** for demonstration)

Answer B - G

Shoe Size	Height(cm)
10	158
11.5	175
10	173
9	164
9	167
10	170
11	172
8	160
8	174
11	175
8	166
7.5	153
10	171
11	181
11	171
10	170
8	156
7.5	161
12	179
11	178
10.5	173
8.5	177
8	165
12	182
13	177
13	192
7.5	157
8.5	163
12	183
10	168
11	180

Page 4 INVESTIGATE THE MATH



Because most shoe sizes correspond to more than one height, this means that there are elements of the domain that correspond with several elements in the range.

This relation is **NOT** a **FUNCTION**.

Shoe size is not an exact (or 1:1) predictor of height.

1.1 Relations & Functions

1.4 Domain & Range

Date: Sept. 16/19
(Every lesson)

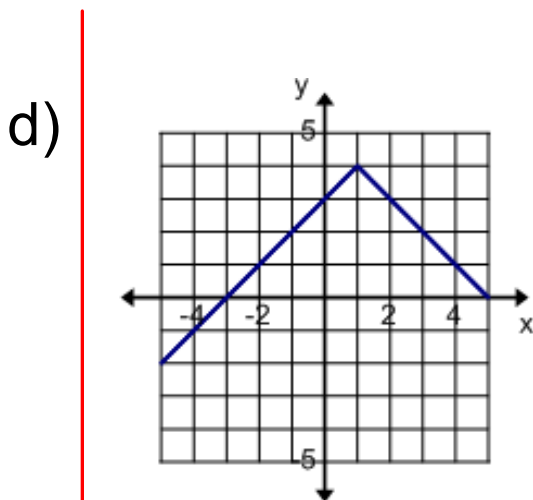
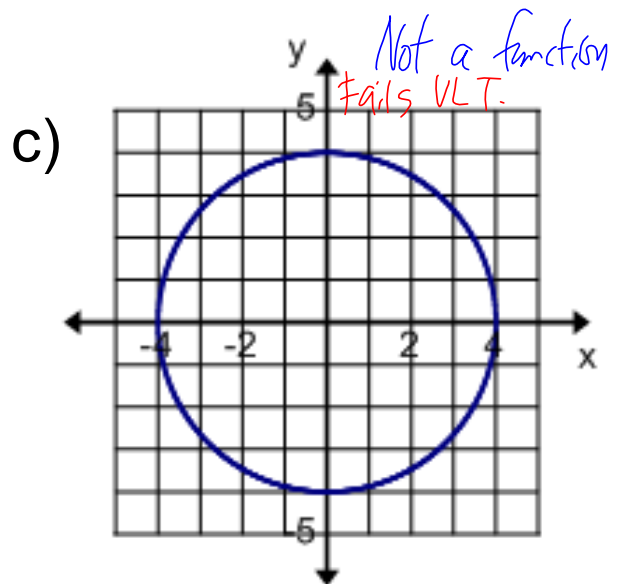
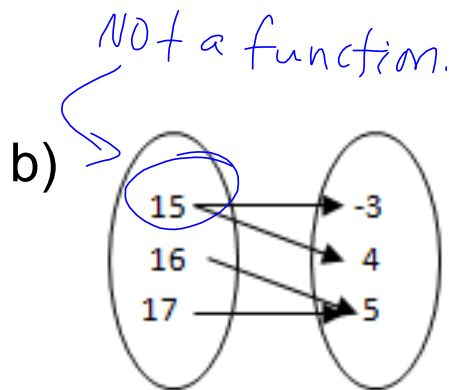
Relation: A set of ordered pairs.

Function: A one-to-one relation.

ie. each x -value has only one corresponding y -value.

Ex.1 Determine if the following relations are functions.

- a) $\{(3, 2), (4, 2), (1, -1), (-1, 1), (3, 5)\}$



Yes: a function

e)

STUDENT NAME	HOCKEY PRACTICE NIGHT
Heather	Thursday
Scott	Tuesday
Galang	Thursday
Jet	Saturday

Yes a function.

Identifying Functions by equations

1. A linear equation is always a function unless it is a vertical line.

$$y = mx + b \quad Ax + By = C \quad Ax + By + C = 0$$

2. A Quadratic is a function in the form of

$$y = ax^2 + bx + c \quad y = a(x - h)^2 + k$$

3. A circle is **NOT** a function.

$$r^2 = x^2 + y^2$$

Ex.2

Circle which relations below are functions.

$$y = x^2 - 4$$

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

$$y = 3$$

$$3x + 4y = 1$$

~~$$x = 3$$~~

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

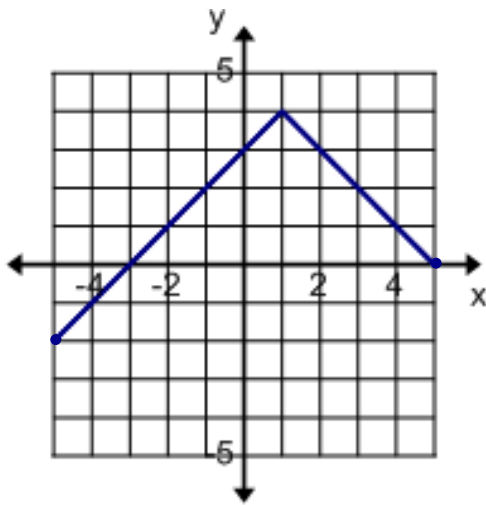
$$y = 3x - 4$$

~~$$x^2 + y^2 = 16$$~~

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

~~$$(x - 2)^2 + (x + 3)^2 = 25$$~~

Describe the following graph's location on the axes.



x is between -5 and 5

y is between -2 and 4

$$D: \{x \in \mathbb{R} \mid -5 \leq x \leq 5\}$$

$$R: \{y \in \mathbb{R} \mid -2 \leq y \leq 4\}$$

We can describe relations mathematically using Domain & Range.

Domain: The set of x -values that form a relation.

Range: The set of y -values that form a relation.

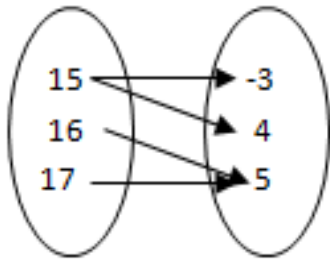
Ex. 3 State the Domain & Range for the following relations.

a) $\{(3, 2), (4, 2), (1, -1), (-1, 1), (3, 5)\}$

Domain: $\{3, 4, 1, -1, 3\}$ or $\{-1, 1, 3, 4\}$ or Domain: _____

Range: $\{2, 2, -1, 1, 5\}$ or Range: $\{-1, 1, 2, 5\}$

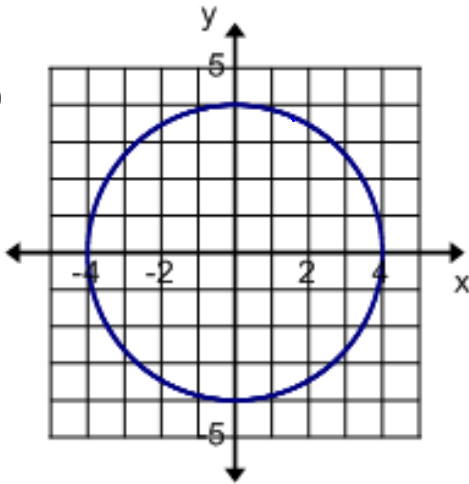
b)



Domain: $\{15, 16, 17\}$

Range: $\{-3, 4, 5\}$

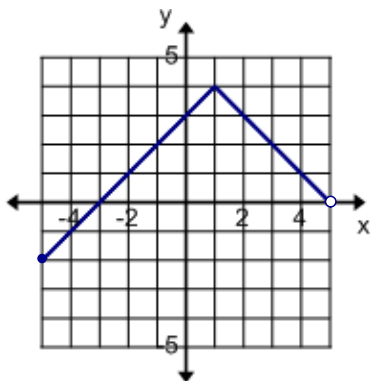
c)



Domain: $\{x \in \mathbb{R} \mid -4 \leq x \leq 4\}$

Range: $\{y \in \mathbb{R} \mid -4 \leq y \leq 4\}$

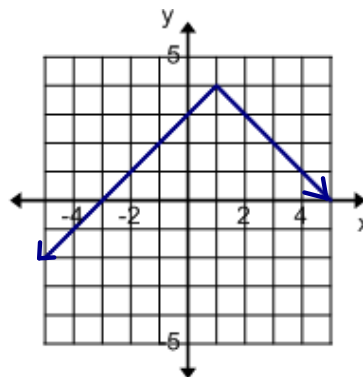
d)



Domain: $\{x \in \mathbb{R} \mid -5 \leq x < 5\}$

Range: $\{y \in \mathbb{R} \mid -2 \leq y \leq 4\}$

e)



Domain: $\{x \in \mathbb{R}\}$

Range: $\{y \in \mathbb{R} \mid y \leq 4\}$

versus

BE READY for tomorrow's Unit SUMMATIVE!

Today's Homework Practice includes:

READ pp. 5-9

pp. 10-11 #1 –3, 6, 7a, 8, 9b

[p.13 #1-3]

pp. 35-36 #1 – 3, 5

AND Worksheets #1&2 "Domain and Range"