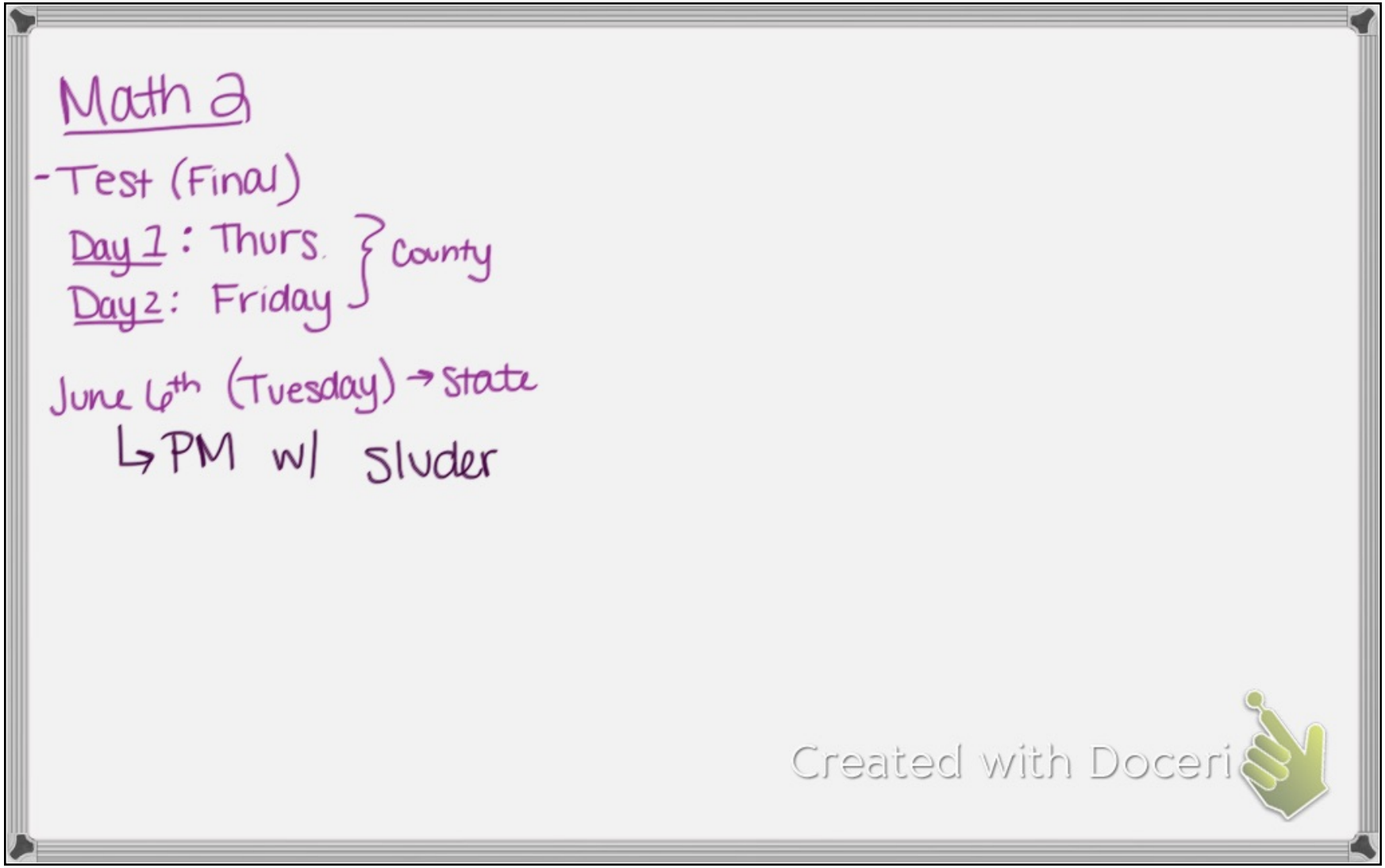

Math 2
-Test (Final)
Day 1 : Thurs.
Day 2 : Friday
} County
June 6th (Tuesday) → State
↳ PM w/ Sluder
Created with Doceri

Review Packet – Math II

Quadratic Formula | Complex #'s

↳ ★ find x-intercepts/solutions for ANY Quadratic.

$$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

standard form = ax^2+bx+c

Complex #: imaginary #

$\sqrt{-1} = i$

ex: Simplify $\sqrt{-40}$

$\sqrt{40} = 2i\sqrt{10}$

$\sqrt{4}$ $\sqrt{10}$

Name: _____

Inverse Variation:

Inverse formula: $y = \frac{k}{x}$, k is the Constant of Proportionality

Example: The force, F, needed to break a board varies inversely with the length, L, of the board. If it takes 24 pounds of pressure to break a board 2 feet long, how many pounds of pressure would it take to break a board that is 5 feet long?

$y = \frac{k}{x}$ → $F = \frac{k}{L}$

$24 = \frac{k}{2}$

$k = 48$

$F = \frac{48}{L}$

$F = \frac{48}{5}$

$F = 9.6$

Probability

P(A or B) = P(A)+P(B) if mutually exclusive

P(A or B) = P(A)+P(B)-P(A∩B) if not mutually exclusive

P(A and B) = P(A)·P(B)

Mutually Exclusive:
Nothing in common with events

Independent:
After doing an event, nothing changes the next probability (ex: with replacement)

Card Deck contains:
52 cards → 4 of every card
26 red → 13 hearts, 13 diamonds
26 black → 13 spades, 13 clubs

Face Card
J, Q, K
(12)

Sample Space:
List / diagram of all possible outcomes
ex: list, chart, tree diagram

Probability Distribution Table:
A table containing each possible outcome for an event & probability of each happening
ex: rolling 2 dice & looking for the probabilities of the sums

★ Know your symbols ★ (∪, ∩, ')

Rational Exponents

An exponent of ½ means square root (√)

An exponent of 1/3 means cube root (∛)

An exponent of 2/5 means $x^{\frac{2}{5}} = \sqrt[5]{x^2} = (\sqrt[5]{x})^2$

To put a fractional exponent in your calculator, you must put parentheses around the fraction.

E → exponent
I → index

Practice:

$8^{\frac{1}{3}} = (\sqrt[3]{8})^1 = (2)^1 = 2$

$64^{\frac{2}{3}} = (\sqrt[3]{64})^2 = (4)^2 = 16$

$4^{\frac{1}{2}} \cdot 4^3 =$

$\sqrt{4} \cdot 4^3 = 2 \cdot 4^3 = 128$

Exponential Growth Formula:

$y = a(1+r)^x$

Decay Formula:

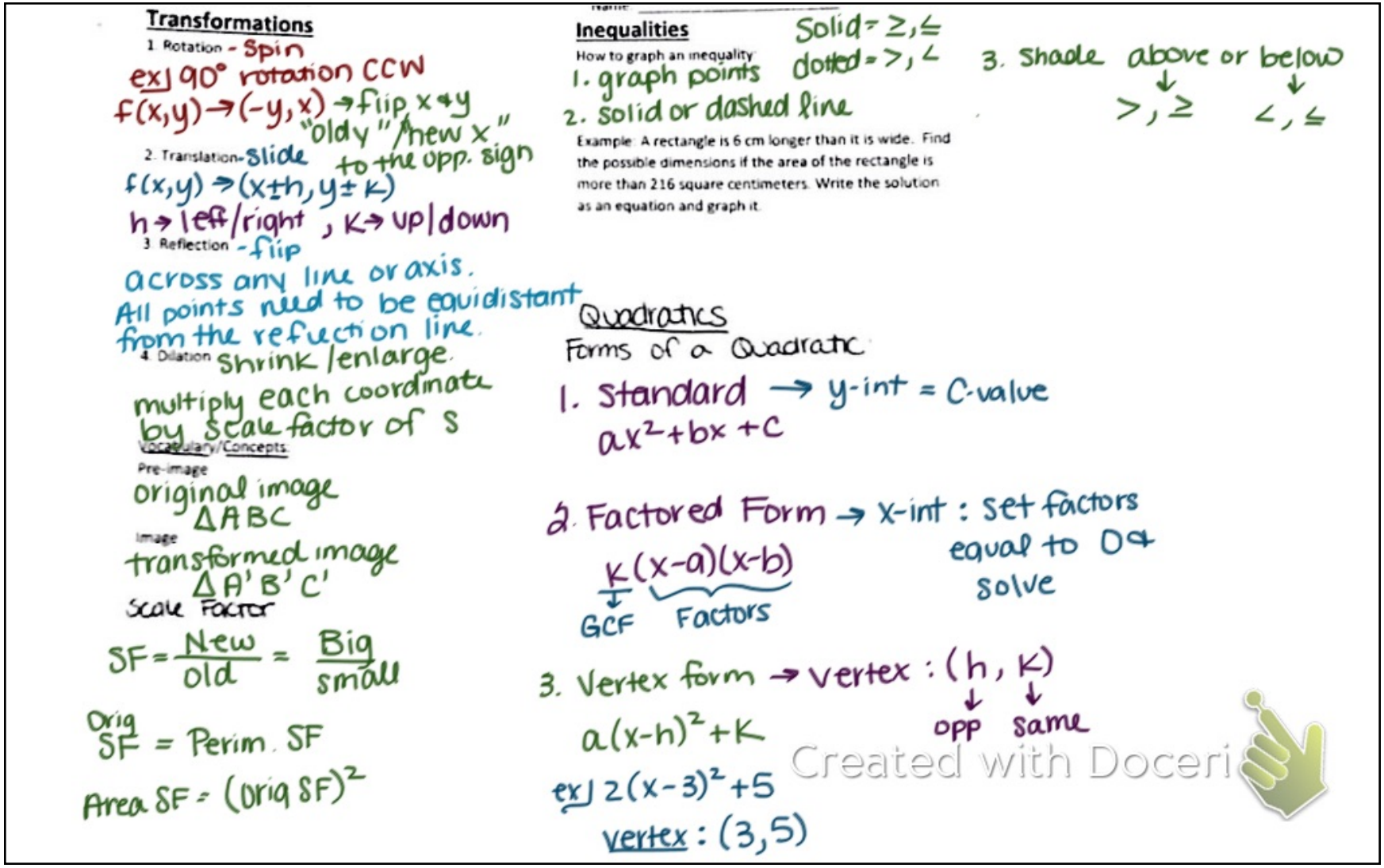
$y = a(1-r)^x$

y = new amount

a = original # / starting #

r = % rate of growth / decay as a decimal

x = time (may see it as t)



Transformations

1. Rotation - Spin

ex) 90° rotation CCW

$f(x,y) \rightarrow (-y,x)$ → flip x & y

"oldy" "new x"

to the opp. sign

2. Translation - Slide

$f(x,y) \rightarrow (x \pm h, y \pm k)$

$h \rightarrow$ left/right, $k \rightarrow$ up/down

3. Reflection - flip

across any line or axis.

All points need to be equidistant from the reflection line.

4. Dilation shrink/enlarge.

multiply each coordinate by scale factor of s

Vocabulary/Concepts:

Pre-image

original image

ΔABC

Image

transformed image

$\Delta A'B'C'$

Scale Factor

$SF = \frac{New}{old} = \frac{Big}{small}$

Orig SF = Perim. SF

Area SF = (Orig SF)^2

Inequalities

How to graph an inequality:

Solid = $\geq, \leq$

dotted = $>, <$

1. graph points
2. solid or dashed line
3. Shade above or below

↓ $>, \geq$ ↓ $<, \leq$

Example: A rectangle is 6 cm longer than it is wide. Find the possible dimensions if the area of the rectangle is more than 216 square centimeters. Write the solution as an equation and graph it.

Quadratics

Forms of a Quadratic

1. Standard → y-int = C-value

ax^2+bx+c

2. Factored Form → x-int: set factors equal to 0 & solve

$k(x-a)(x-b)$

k: GCF; (x-a)(x-b): Factors

3. Vertex form → vertex: (h, K)

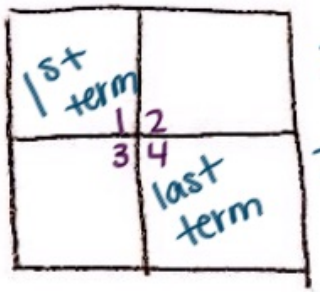
$a(x-h)^2+K$

h: opp; K: same

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

vertex: (3,5)

Factoring/Solving a Quadratic



II + III = b

I · IV = 1st · last term

Review Packet – Math II

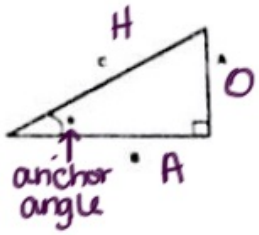
★ **Trigonometry** SOH CAH TOA

Three ratios and their meaning:

1. $\sin\theta = \frac{\text{opposite}}{\text{hypotenuse}}$

2. $\cos\theta = \frac{\text{Adjacent}}{\text{hypotenuse}}$

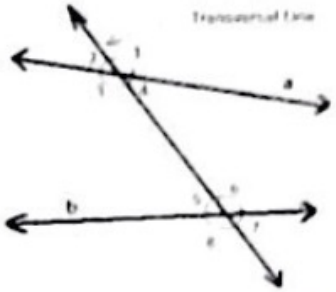
3. $\tan\theta = \frac{\text{opposite}}{\text{adjacent}}$



Label the triangle's sides as opposite, adjacent, and hypotenuse

Name: _____

Angle relationships formed by parallel lines with a transversal:



List each pair of congruent angles shown in the diagram, assuming that lines a and b are parallel and identify their relationship (type of angle)

Vertical ∠'s → ≅

Corresponding ∠s → ≅

Alternate interior → ≅

Alternate exterior → ≅

Same Side interior → sum 180°

Same Side exterior → sum 180°

Linear Pairs → Sum 180°

gonometry ★ mode → degrees ★

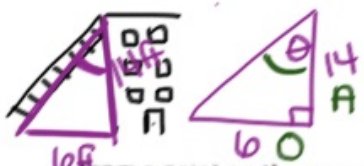
How to find an angle measure given side lengths:

★ use inverse trig function (arctan) ★

$\tan\theta = \frac{12}{5}$

$\theta = \tan^{-1}\left(\frac{12}{5}\right)$

Example: A ladder leans against a building. The foot of the ladder is 6 feet from the building. The ladder reaches a height of 14 feet on the building. What is the angle of the ladder with the building?



$\tan\theta = \frac{6}{14}$

$\theta = \tan^{-1}\left(\frac{6}{14}\right)$

From a point on the ground 25 feet from the foot of a tree, the angle of elevation of the top of the tree is 32°. Find to the nearest foot, the height of the tree.

$O_{25}: \tan 32 = \frac{x}{25} \cdot 25$

$x = 25\tan 32$

Triangle Congruence

The conditions which prove two triangles are congruent:

1. SAS → Side Angle Side
2. ASA → Angle, Side, Angle
3. AAS → Angle Angle Side
4. SSS → Side Side Side
5. (Only if it is a right triangle) HL → hypotenuse leg (look like ASS/SSA)

~~ASS~~ ~~SSA~~

Similarity ★ scale Factors ★

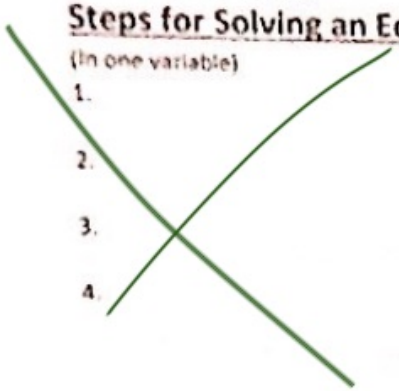
1. AA → Angle Angle (≅)
2. SAS → Side Angle Side (Same SF)
3. SSS → Side Side Side (Same SF)

Review Packet – Math II

Steps for Solving an Equation

(In one variable)

1.
2.
3.
4.



Name: _____

Solve these equations:

$12 - 3x = -4(2x + 4)$

$1/2x - 5 = 2/3(18 - 9x) + 4$

Functions

Key Features: → Quadratics

1. x & y inter cepts
2. Continuous | discontinuous
3. Domain (x-values)
4. Range (y-values)
5. intervals increasing & decreasing
6. minimum & maximum (vertex)
7. shape

Transformations of functions:

If the parent function is $f(x) = x^2$, then identify each of the following transformations. (Tell how the graph of the new function changes from the original.)

1. $f(x) = x^2 - 2$ shift down 2
2. $f(x) = 4x^2$ stretch vertically (skinnier)
3. $f(x) = (x + 3)^2$ shift left 3
4. $f(x) = \frac{1}{3}x^2$ shrink vertically (wider)

X $f(x) = (0.3x)^2$ stretch horizontally

Types of Functions and a graph of each:

1. Linear → line

$y = mx + b$

2. Quadratic → parabola

$y = ax^2 + bx + c$

3. Square Root

$y = \sqrt{x}$

4. Absolute Value

$y = |x|$

5. Inverse Variation

$y = \frac{k}{x}$

6. Piecewise

Vocabulary:

Domain

Range

Cube root

Discrete

Discontinuous

Continuous