

Back ground

Vogler (Note: See Chapter 1 & Sections 2.1, 2.2 for self review)

- 1) Inequalities ($<, \leq, >, \geq$)
- 2) Interval Notation $(a,b), [a,b], (a,b]$
- 3) Absolute Value $|x| = \begin{cases} x & x \geq 0 \\ -x & x < 0 \end{cases}$

Ex: $|1-7| = -(-7) = 7$

4) Polynomials & Factoring

- Useful Facts:
- a) $A^2 - B^2 = (A-B)(A+B)$
 - b) $A^3 - B^3 = (A-B)(A^2 + AB + B^2)$
 - c) $A^3 + B^3 = (A+B)(A^2 - AB + B^2)$

- Ex $x^2 - 6x + 8 = (x-4)(x-2)$

5) $p \cdot q = 0 \Leftrightarrow p = 0 \text{ or } q = 0$

Ex Solve $2x^2 = x + 3$ for x :

$2x^2 = x + 3 \Rightarrow 2x^2 - x - 3 = 0 \Rightarrow (2x-3)(x+1) = 0$

$\Rightarrow 2x-3=0 \text{ or } x+1=0 \Rightarrow x = \frac{3}{2} \text{ or } x = -1$

6) Completing the Square

Ex: $x^2 + 10x = (x^2 + 10x + 25) - 25 = (x+5)^2 - 25$

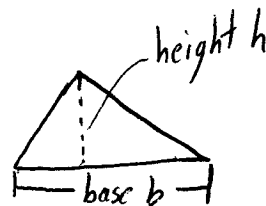
(Divide by 2
& Square it)

(Add & Sub
by same amount)

7) Quadratic Formula

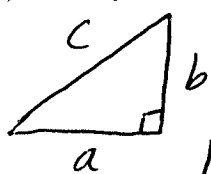
if $ax^2 + bx + c = 0 \Rightarrow x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

8) Area of Triangle = $\frac{1}{2}(\text{base})(\text{height}) = \frac{1}{2}bh$



9) Operations with Fractions & Exponents

10) Pythagorean Theorem: In a right triangle

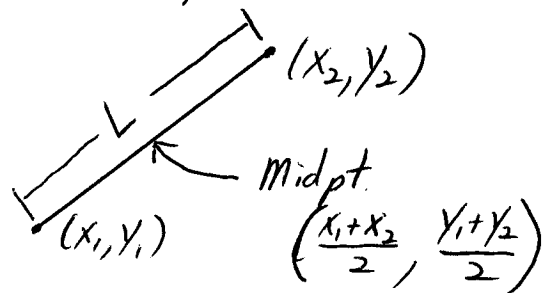


$$a^2 + b^2 = c^2$$

Note: If $a^2 + b^2 = c^2$ on $\Delta \Rightarrow \Delta$ is a right triangle

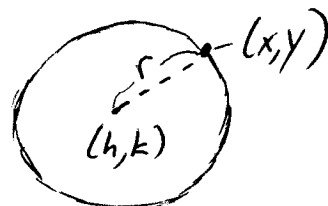
11) Distance Formula

$$L = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$



12) Midpoint: $(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2})$

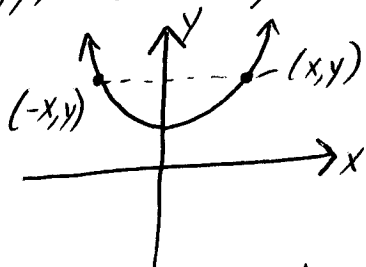
13) Circles: $(x-h)^2 + (y-k)^2 = r^2$
represents a circle of radius r centered @ (h, k)



14) Graphs & Symmetry

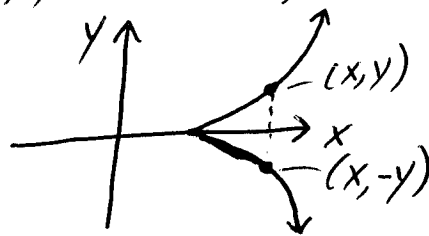
a) Symmetric about y-axis

If (x, y) is on graph, then $(-x, y)$ is on graph.



b) Symmetric about x-axis

If (x, y) is on graph, then $(x, -y)$ is on graph



c) Symmetric about origin

If (x, y) is on graph, then $(-x, -y)$ is on graph

