Math 6: Half 2 Review

1) Sequences

Arithmetic: $a_n = a_1 + (n - 1) * d$ Arithmetic mean: $a_n = \frac{a_{n-1} + a_{n+1}}{2}$

Geometric: $b_n = b_1 * q^{n-1}$

Geometric mean: $b_n = \sqrt{b_{n-1} \cdot b_{n+1}}$

2) Ruler and compass (take a ruler and compass with you)

-congruence -isosceles triangle

-midpoint, perpendicular bisector - angular bisector

3) Coordinate geometry

Straight line equation: y = mx + b, m – slope, b - y-intercept

Distance between two points: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Circle equation: $(x - a)^2 + (y - b)^2 = r^2$, of radius r and center with coordinates (a, b).

vertical translation of function: $f(x) \rightarrow f(x) + c$.

horizontal translation of function: $f(x) \rightarrow f(x+c)$

4) Identities $(a + b)^2 = a^2 + 2ab + b^2$ $(a - b)^2 = a^2 - 2ab + b^2$ $(a + b)(a - b) = a^2 - b^2$

5) Equation systems

- substitution method

- elimination method

6) Inequalities

 $a < b \Leftrightarrow (-a) > (-b)$

 $ab > 0 \Leftrightarrow (a > 0 \text{ AND } b > 0) \text{ OR } (a < 0 \text{ AND } b < 0)$

 $ab < 0 \Leftrightarrow (a > 0 \text{ AND } b < 0) \text{ OR } (a < 0 \text{ AND } b > 0)$

7) Odd, even, invariants

Odd + even = odd etc.