

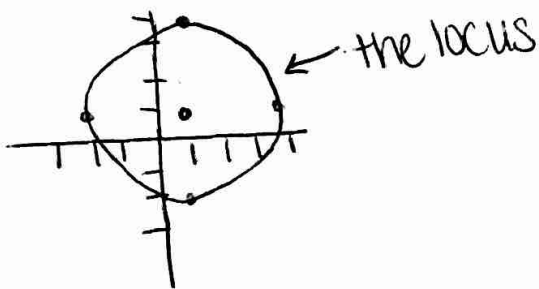
Distance Formula & Circle Notes

• given two points (x_1, y_1) & (x_2, y_2)

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

• a locus is the set of solution points.

ex the distance of 3 from $(1, 1)$



* this is a circle with equation $(x-1)^2 + (y-1)^2 = 9$
→ comes from distance formula

ex locus of solutions that are the same distance from $(1, 2)$ & $(6, 8)$

$$\underbrace{\sqrt{(x-6)^2 + (y-8)^2}}_{\text{distance w/ 1st pt}} = \underbrace{\sqrt{(x-1)^2 + (y-2)^2}}_{\text{distance w/ 2nd pt}}$$

$$(x-6)^2 + (y-8)^2 = (x-1)^2 + (y-2)^2 \quad \text{square both sides}$$

$$x^2 - 12x + 36 + y^2 - 16y + 64 = x^2 - 2x + 1 + y^2 - 4y + 4 \quad \text{FOIL}$$

$$-12x - 16y + 100 = -2x - 4y + 5$$

$$-12y = 10x - 95$$

$$\boxed{y = -\frac{5}{6}x + \frac{95}{12}}$$

← every pt. on this line is a solution