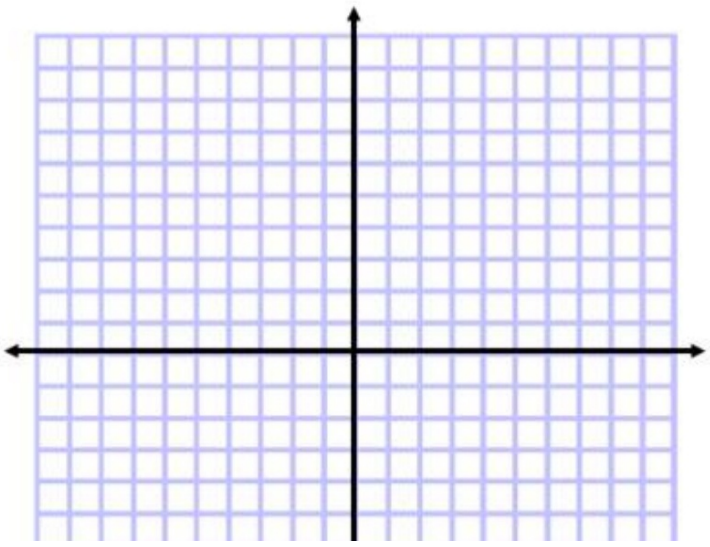
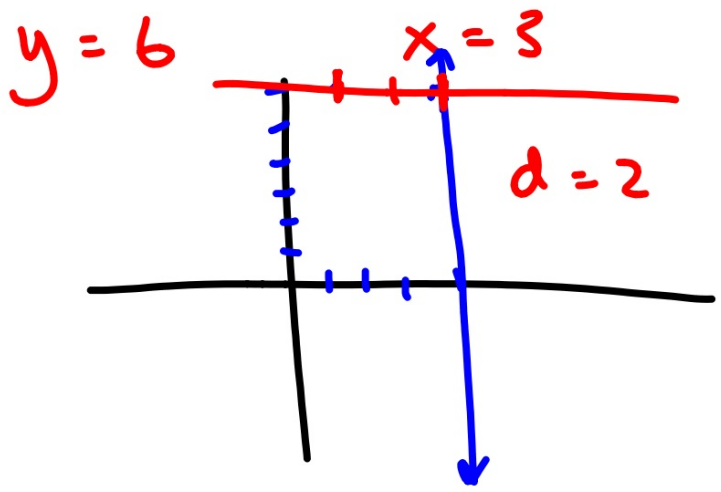
Geometry 3.6
Find the distance between a point and a line
Find the distance between parallel lines
pythagorean theorem
hypotenuse
distance
parallel
perpendicular
equidistant



Whiteboards

6. Line ℓ contains points (4, 18) and (−2, 9). Point P has coordinates (−9, 5).

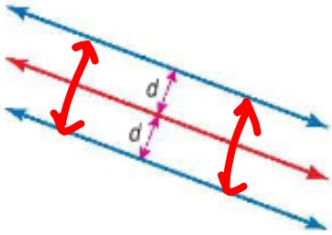


y = 6 (2, 1)

x = 4 (2, 6)

Theorem 3.9 Two Lines Equidistant from a Third

In a plane, if two lines are each equidistant from a third line, then the two lines are parallel to each other.



KeyConcept Distance Between Parallel Lines

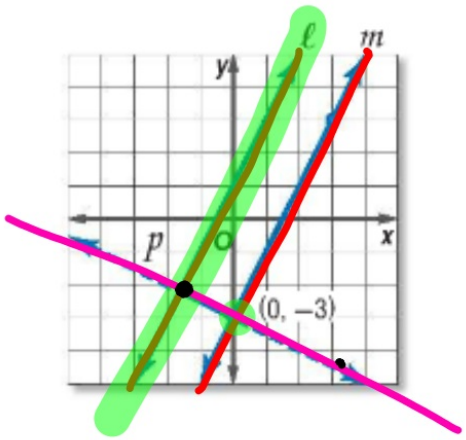
The distance between two parallel lines is the perpendicular distance between one of the lines and any point on the other line.

Parallel lines are always the same distance apart.
(So measure wherever it is convenient for you...)

1. Circle left
2. Circle other y int.

Parallel lines are always same distance apart!

1. You have the equations for l & m already (pick one eq & other y-intercept: circle them)
2. Write the equation of line perp.
2. Find the point of intersection of l and p
3. Use y-intercept from m as your (x,y)
4. Use the pythagorean theorem



Example 3 Distance Between Parallel Lines

Find the distance between the parallel lines ℓ and m with equations $y = 2x + 1$ and $y = 2x - 3$, respectively.

$y = -\frac{1}{2}x - 3$

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

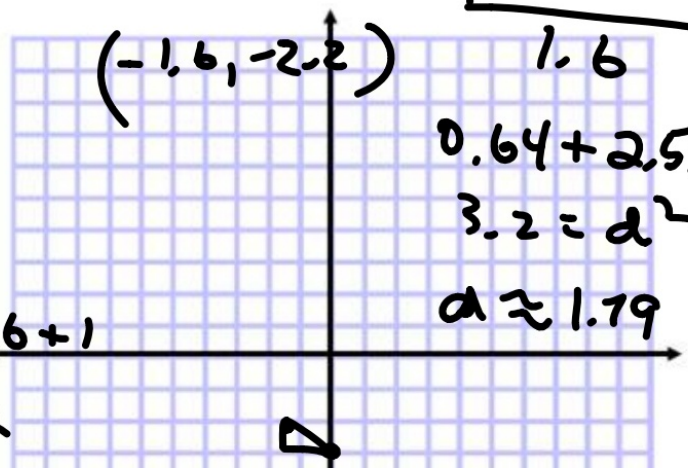
$+\frac{1}{2}x - 1 \quad +\frac{1}{2}x - 1$

$\frac{2.5x}{2.5} = \frac{-4}{2.5}$

$x = -1.6$

$y = 2(-1.6)+1$

$= -2.2$





$0.64 + 2.56 = d^2$

$3.2 = d^2$

$d \approx 1.79$

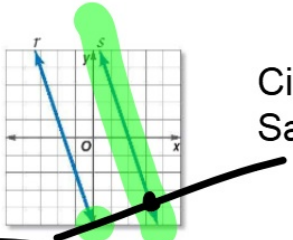
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$-3x+6=\frac{1}{3}x-5$

$-\frac{1}{3}x-6 \quad -\frac{1}{3}x-6$

$\frac{-3\frac{1}{3}x=-11}{-3\frac{1}{3} \quad -3\frac{1}{3}}$

$x=3.3$



$y=\frac{1}{3}x-5$

Circle 1 equation, circle other y-int.
Same as yesterday from here.

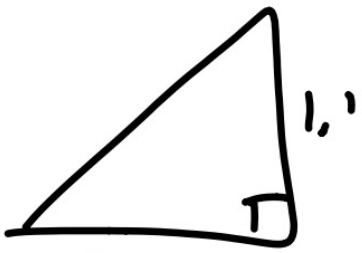
$y=-3\cdot 3.3+6$

$=-9.9+6$

$y=-3.9$

GuidedPractice

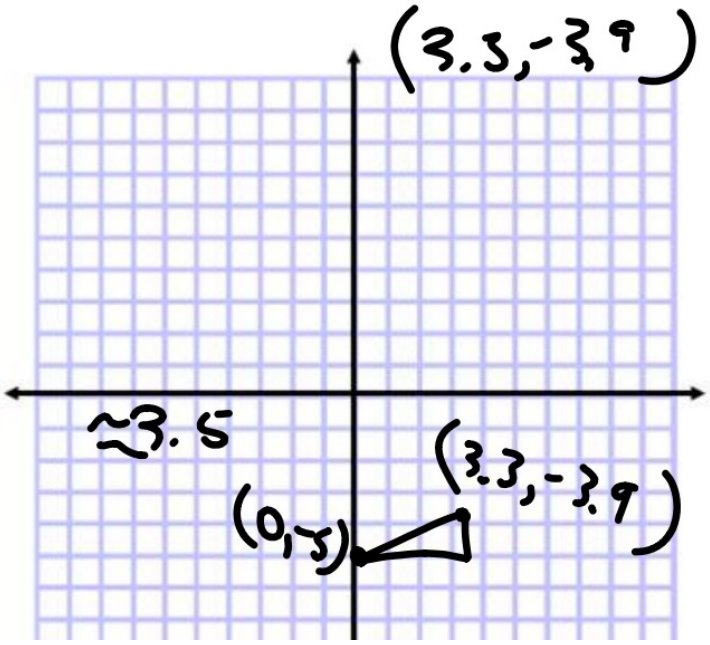
3A. Find the distance between the parallel lines r and s whose equations are $y=-3x-5$ and $y=-3x+6$, respectively.



$3.3^2+1.1^2=h^2$

$10.89+1.21=h^2$

$12.1=h^2$



1. circle | eqtn (line)
2. circle other yint (P)
⋮

like yesterday.

3. 6 21-29 odd

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