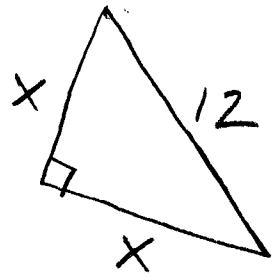
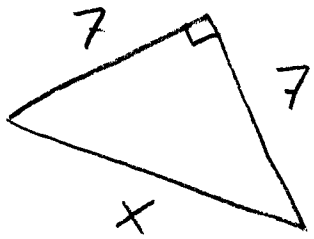
BE – Geometry 11

Tuesday 9-27-11

① Find x:



② Find x:



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① $x^2 + x^2 = 12^2$

$2x^2 = 144$

$x^2 = 72$ $\therefore x = \sqrt{36}\sqrt{2}$

$\boxed{x = 6\sqrt{2}}$

$\approx 8.485281374...$

② $7^2 + 7^2 = x^2$

$49 + 49 = x^2$

$x = \sqrt{98} = \sqrt{49}\sqrt{2} = \boxed{7\sqrt{2}}$

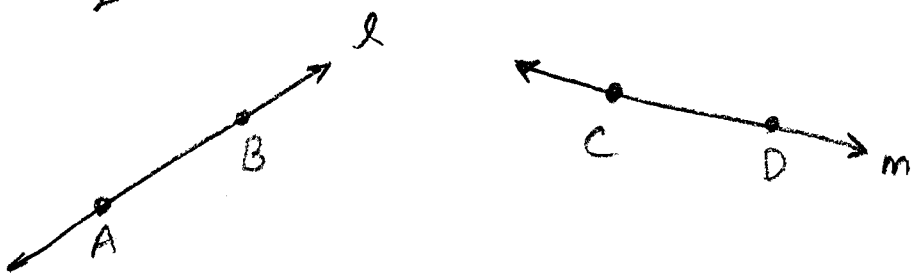
$\approx 9.899494937...$

Ch. 3-3 Slopes of Lines

Naming Points Example

A(-2, -5)
B(4, 7)
C(0, 2)
D(8, -2)

Naming Lines Example



Line AB
Line l
$\overleftrightarrow{AB}$
$\overleftrightarrow{BA}$
Line BA

Line CD
Line m
$\overleftrightarrow{CD}$
$\overleftrightarrow{DC}$
Line DC

Ex 3A Pg 141 Find slopes of $\overleftrightarrow{AB}$, $\overleftrightarrow{CD}$. State whether $\parallel$, $\perp$, or diagonal

A(-2, -5), B(4, 7) $m = \frac{7+5}{4+2} = \frac{12}{6} = 2 = m$

C(0, 2), D(8, -2) $m = \frac{-2-2}{8-0} = \frac{-4}{8} = -\frac{1}{2} = m$

$\therefore$ Lines are Perpendicular Because slopes are opposite, reciprocals

Postulates ⇒ Ch. 3

3-2 Two non-vertical lines have the same slope iff they are parallel. (if and only if)

3-2 Two non-vertical lines are perpendicular iff the products of their slopes is -1. (Ex) $\frac{2}{1} \cdot -\frac{1}{2} = -1$

opposite reciprocals

(Ex 3b pg 111) $A(-8,-7)$, $B(4,-4)$, $C(-2,-5)$, $D(1,7)$

Are $\overleftrightarrow{AB}$, $\overleftrightarrow{CD}$ $\parallel$, $\perp$, or diagonal?

$A(-8,-7), B(4,-4)$ $\quad m = \frac{-4+7}{4+8} = \frac{3}{12} = \frac{1}{4} = m$

$C(-2,-5), D(1,7)$ $\quad m = \frac{7+5}{1+2} = \frac{12}{3} = 4 = m$

Lines are diagonal

Because they are not $\parallel$ or $\perp$

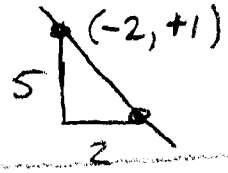
(Ex 4) Pg 141 Without using or finding the new equation of a line, graph the line that contains $P(-2,1)$ and is perpendicular to $\overleftrightarrow{JK}$ if $J(-5,-4)$, $K(0,-2)$

Slope of $\overleftrightarrow{JK}$

$J(-5,-4)$, $K(0,-2)$ $\quad m = \frac{-2+4}{0+5} = \frac{2}{5}$

$\therefore m_{\perp} = -\frac{5}{2}$

Start at $P(-2,+1)$ and "move"



Now find the EOL

$(-2,+1)$ $\quad m_{\perp} = -\frac{5}{2}$

x, y

$y = mx + b$

$+1 = -\frac{5}{2} \cdot -2 + b$

$+1 = 5 + b$

$-5 \quad -5$

$-4 = b$ $\quad \therefore \boxed{y = -\frac{5}{2}x - 4}$