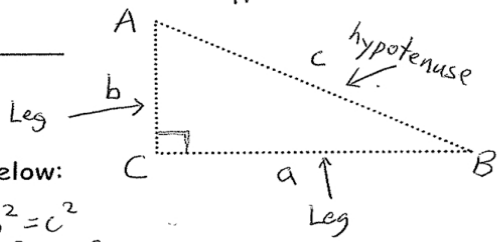
1.3: Distance, Midpoint, & Pythagorean Theorem

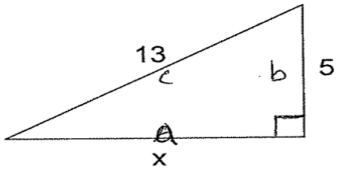
RECALL:

Pythagorean Theorem: In a right triangle the sum of the squares of the legs equals the square of the hypotenuse

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



1) Find the missing side of the triangle below:



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

$a^2 + 5^2 = 13^2$

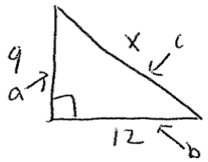
$a^2 + 25 = 169$

$-25 \quad -25$

$\sqrt{a^2} = \sqrt{144}$

$a = 12$

2) Find the hypotenuse of a triangle with legs 9 cm. and 12 cm.
(Sketch a figure!)



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

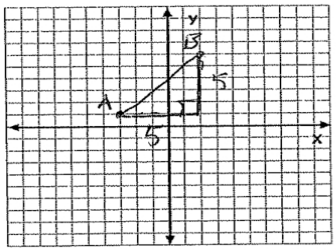
$9^2 + 12^2 = c^2$

$81 + 144 = c^2$

$\sqrt{225} = \sqrt{c^2}$

$15 = c$

3) Find the distance from A(-3, 1) to B(2, 6) using the Pythagorean Theorem.



$5^2 + 5^2 = c^2$

$25 + 25 = c^2$

$\sqrt{50} = \sqrt{c^2}$

$\sqrt{25}\sqrt{2}$

$5\sqrt{2} = c$