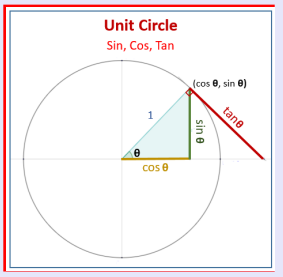
Trigonometry

Lecture 2



Feb 19-8:47 AM

More algebra review

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

LCD = 6

$6 \cdot \frac{1}{2}x - 6 \cdot \frac{2}{3} = 6 \cdot \frac{1}{3}x - 6 \cdot \frac{1}{2}$

$3x - 4 = 2x - 3$

$3x - 2x = -3 + 4$

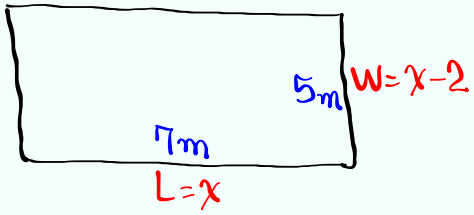
$\boxed{x = 1}$

Soln Set $\{1\}$

Aug 27-10:29 AM

The perimeter of a rectangular shape is 24 meters. Its width is 2 meters shorter than its length. Find its area.

$P = 24$ m



$2L + 2W = 24$

$2(x) + 2(x-2) = 24$

$2x + 2x - 4 = 24$

$4x = 24 + 4$

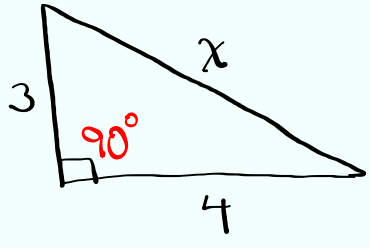
$4x = 28$

$\boxed{x = 7}$

$A = LW = 7(5) = \boxed{35\ m^2}$

Aug 27-10:32 AM

Find x:

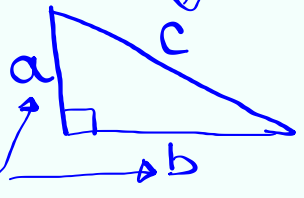


Triangle

Right Triangle

Pythagorean thrm

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



$3^2 + 4^2 = x^2$

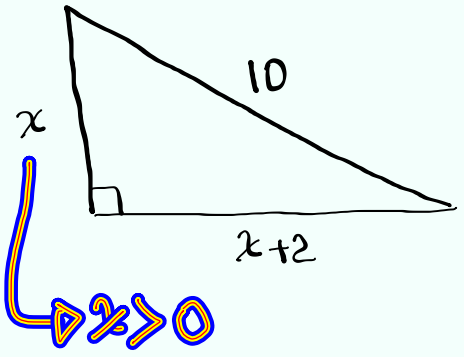
$9 + 16 = x^2$

$x^2 = 25$

$\boxed{x = 5}$

Aug 27-10:39 AM

Find x



Right Triangle

Pythagorean formula

$x^2 + (x+2)^2 = 10^2$

$x^2 + (x+2)(x+2) = 100$

$x^2 + x^2 + 2x + 2x + 4 = 100$

$2x^2 + 4x + 4 - 100 = 0$ Solve

$2x^2 + 4x - 96 = 0 \rightarrow \boxed{x^2 + 2x - 48 = 0}$

Aug 27-10:44 AM

Solve $x^2 + 2x - 48 = 0$

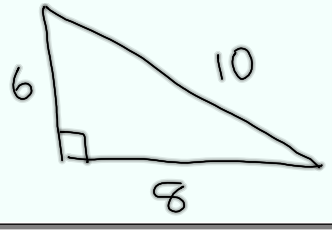
Method I: By Factoring

1, 48
2, 24
3, 16
4, 12
6, 8

$(x - 6)(x + 8) = 0$

$x - 6 = 0$ OR $x + 8 = 0$

$\boxed{x = 6}$ $x \neq -8$



$A = \frac{6 \cdot 8}{2} = 24$ unit^2

$P = 6 + 8 + 10 = 24$ unit

Aug 27-10:48 AM

Solve $x^2 + 2x - 48 = 0$

Method II: Using Quadratic formula

Quadratic Equation

$ax^2 + bx + c = 0$

$a=1,\ b=2,\ c=-48$

$x = \dfrac{-b \pm \sqrt{b^2-4ac}}{2a}$

$b^2-4ac = 2^2-4(1)(-48)$

$= 4 + 192 = 196$

$x = \dfrac{-2 \pm \sqrt{196}}{2(1)} = \dfrac{-2 \pm 14}{2}$

$x = \dfrac{-2+14}{2} = \dfrac{12}{2} = 6$

$x = \dfrac{-2-14}{2} = \dfrac{-16}{2} = -8$ ✗

Aug 27-10:53 AM

Factoring

$4x + 10 = 2 \cdot 2x + 2 \cdot 5 = \boxed{2(2x+5)}$

GCF

$x^2 + 7x + 10 = \boxed{(x+2)(x+5)}$

1,10
2,5

$3x^2 + 5x - 8 = \boxed{(3x+8)(x-1)}$

1,8
2,4

Aug 27-11:00 AM

Special Factoring

$A^2 - B^2 = (A+B)(A-B)$

$A^2 + B^2 = \text{Prime}$

$A^3 - B^3 = (A-B)(A^2+AB+B^2)$

$A^3 + B^3 = (A+B)(A^2-AB+B^2)$

Aug 27-11:06 AM

Factor Completely:

1) $2x^2 - 200 = 2(x^2-100)$

$= 2(x^2-10^2) = 2(x+10)(x-10)$

2) $x^3 + 36x = \boxed{x(x^2+36)}$

3) $x^3 - 64 = x^3 - 4^3 = (x-4)(x^2+4x+16)$

4) $2x^5 + 2000x^2$

$= 2x^2(x^3+1000)$

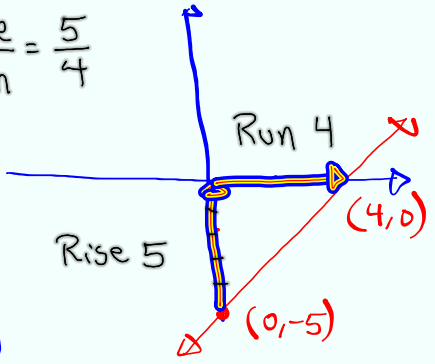
$= 2x^2(x^3+10^3) = 2x^2(x+10)(x^2-10x+100)$

Aug 27-11:09 AM

$5x - 4y = 20$ then Graph

x	y
0	-5
4	0

$\text{Slope} = \frac{\text{Rise}}{\text{Run}} = \frac{5}{4}$



Isolate Y.

$5x - 4y = 20$

$-4y = -5x + 20$

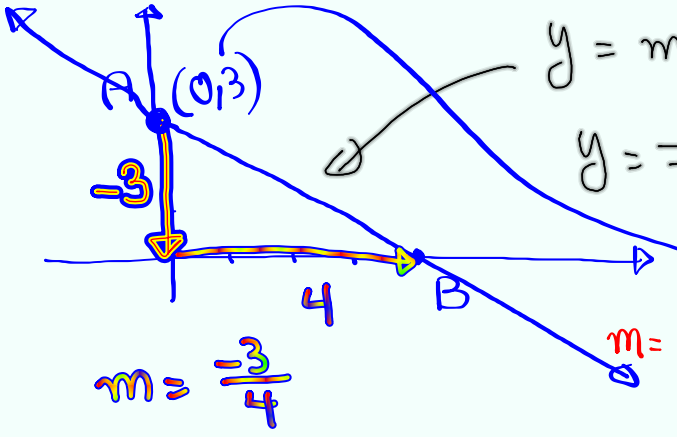
$y = \frac{-5}{-4}x + \frac{20}{-4}$ $\Rightarrow$ $y = \frac{5}{4}x - 5$

Slope-Int Form

$y = mx + b$

Aug 27-11:17 AM

Plot A(0,3), B(4,0), Draw $\overleftrightarrow{AB}$



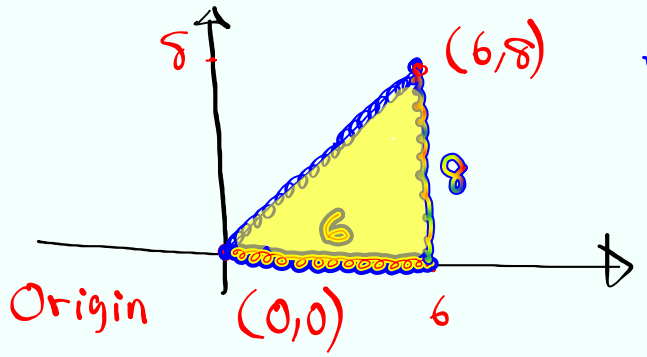
$y = mx + b$

$y = \frac{-3}{4}x + 3$

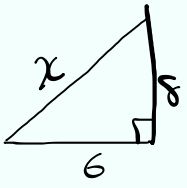
$m = \frac{-3}{4}$

Aug 27-11:24 AM

Draw the line segment that connects (0,0) & (6,8).



what is the distance from (0,0) to (6,8)?



$6^2 + 8^2 = x^2$

$36 + 64 = x^2$

$x^2 = 100$

$x = 10$

Aug 27-11:28 AM