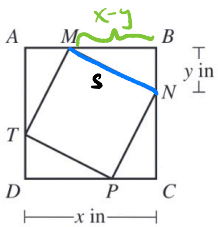
G & L
6-3-22

Math E25 April 2022

$(x-y)^2 = (x-y)(x-y)$ FOIL
$x^2 - 2xy + y^2$

57

57. In the figure shown below, square $MNPT$ is inscribed in square $ABCD$. The length of $\overline{DC}$ is x inches, and the length of $\overline{BN}$ is y inches. In terms of x and y, which of the following expressions gives the area, in square inches, of $MNPT$?



A. $x^2 - y^2$
B. $x^2 + y^2$
C. $xy - y^2$
D. $x^2 - 2xy + y^2$
E. $x^2 - 2xy + 2y^2$

Big square : x^2

$s^2 = y^2 + (x-y)^2$
$= y^2 + x^2 - 2xy + y^2$
$= x^2 - 2xy + 2y^2$

59

59. For $0° < a° < 90°$ and $0 < b < 1$, when $\cos a° = b$, which of the following expressions is equivalent to $\cos(2a°)$?

(Note: $\cos 2\theta = (\cos \theta)^2 - (\sin \theta)^2$)

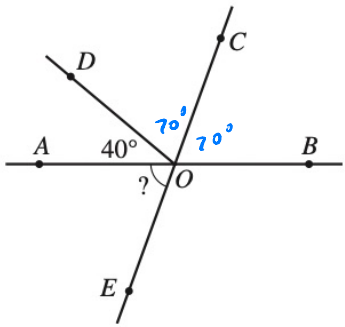
A. -1
B. 0
C. 1
D. $b^2 - a^2$
E. $2b^2 - 1$

$\cos^2 a = (\cos a)^2$

$\cos^2 x + \sin^2 x = 1 \Rightarrow \sin^2 x = 1 - \cos^2 x$

$\cos(2a) = \cos^2(a) - \sin^2(a)$
$= \cos^2(a) - (1 - \cos^2 a)$
$= 2\cos^2 a - 1$
$= 2(\cos a)^2 - 1$
$= 2b^2 - 1$

32. In the figure below, $\overleftrightarrow{AB}$ and $\overleftrightarrow{CE}$ intersect at O, $\overrightarrow{OC}$ bisects $\angle BOD$, and the measure of $\angle AOD$ is 40°. What is the measure of $\angle AOE$?



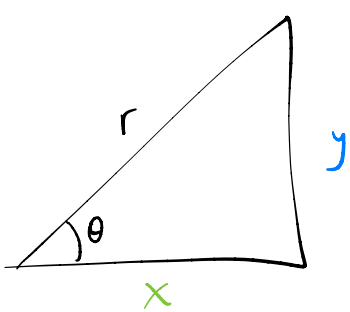
F. 40°
G. 50°
H. 60°
J. 70°
K. 80°

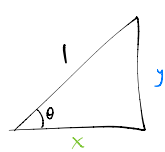
37) $x^2 + p = 0$

B $\quad x \in \mathbb{Z}$ $\quad \in$ "in" $\quad \mathbb{Z}$ $\{\ldots -3, -2, -1, 0, 1, 2, 3 \ldots\}$

$\Rightarrow x^2$ is a perfect square

$\Rightarrow p$ is a negative perfect square





$\cos\theta = \frac{x}{r}$

$r\cos\theta = x$

$r\sin\theta = y$

$x = \cos\theta$

$y = \sin\theta$