Q1

Saturday, May 30, 2020 8:28 AM

prove or disprove $\sin a \sin b = \frac{1}{2}[\cos(a-b) - \cos(a+b)]$

Product-to-Sum identity

$\boxed{\text{B) Identity}}$

Q2

Saturday, May 30, 2020 8:34 AM

$$9\cos(-300^o) + i \cdot 9\sin(-300^o)$$

$e^{i\theta} = \cos\theta + i\sin\theta$

$$9\cos(-300^\circ) + i \cdot 9\sin(-300^\circ) = 9e^{(-300^\circ)i}$$

$$= 9(\cos(-300^\circ) \cdot i\sin(-300^\circ))$$

E) $(\cos(-300^\circ) \cdot i\sin(-300^\circ))$

F) $9e^{(-300^\circ)i}$

Q3

Saturday, May 30, 2020 8:45 AM

prove or disprove

$$4\cos^2(2x)\cos(3x) - 2\cos 3x - \cos(7x) = \cos x$$

$$4\cos^2(2x)\cos(3x) - 2\cos(3x) - \cos(7x) = \cos(x)$$

$\boxed{\text{*) NOT identity}}$

Q4

Saturday, May 30, 2020 8:46 AM

Prove the following identity

$$\frac{\cos(x)+1}{\sin(x)} = \cot(x)+\csc(x)$$

$$\cot\theta = \frac{\cos\theta}{\sin\theta}$$

$$\csc\theta = \frac{1}{\sin\theta}$$

$$\frac{\cos(x)+1}{\sin(x)} = \cot(x)+\csc(x)$$

$$= \frac{\cos(x)}{\sin(x)} + \frac{1}{\sin\theta}$$

$$\frac{\cos(x)+1}{\sin(x)} = \frac{\cos(x)+1}{\sin(x)}$$

$\boxed{\text{b) Identity}}$

Q5

Saturday, May 30, 2020 8:47 AM

$$15e^{(180^o)i}$$

$e^{i\theta} = \cos\theta + i\sin\theta$

$i = i$

$i^2 = -1$

$i^3 = -i$

$i^4 = 1$

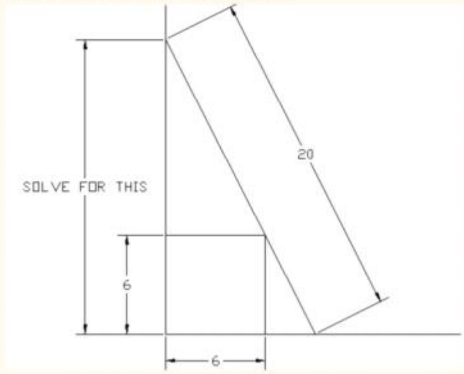
$$15e^{(180^\circ)i} = 15(\cos(180^\circ) + i\sin(180^\circ))$$
$$= 15(-1 + i(0))$$
$$= \underline{\underline{-15 + i(0)}}$$

$$\boxed{A) \approx -15 + i(0)}$$

Q6

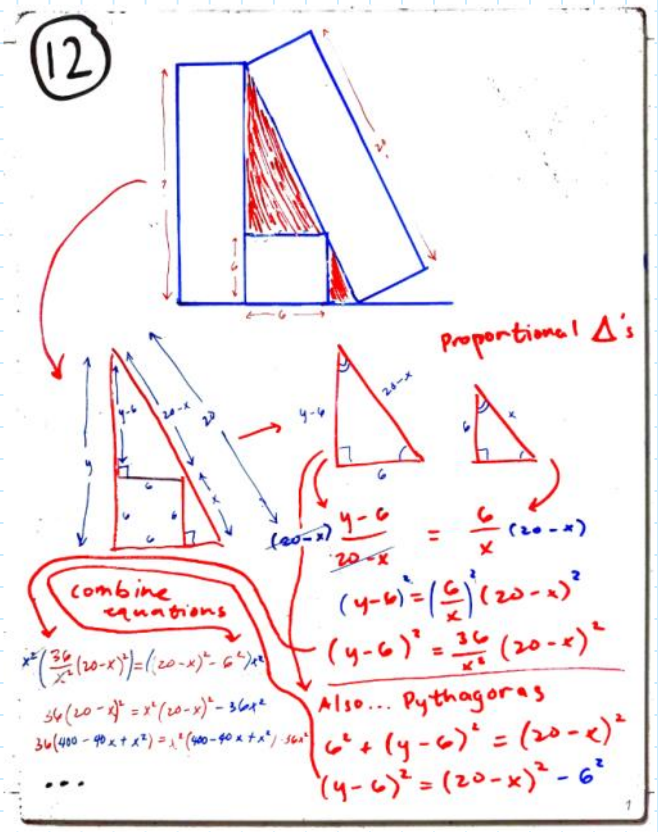
Saturday, May 30, 2020 8:54 AM

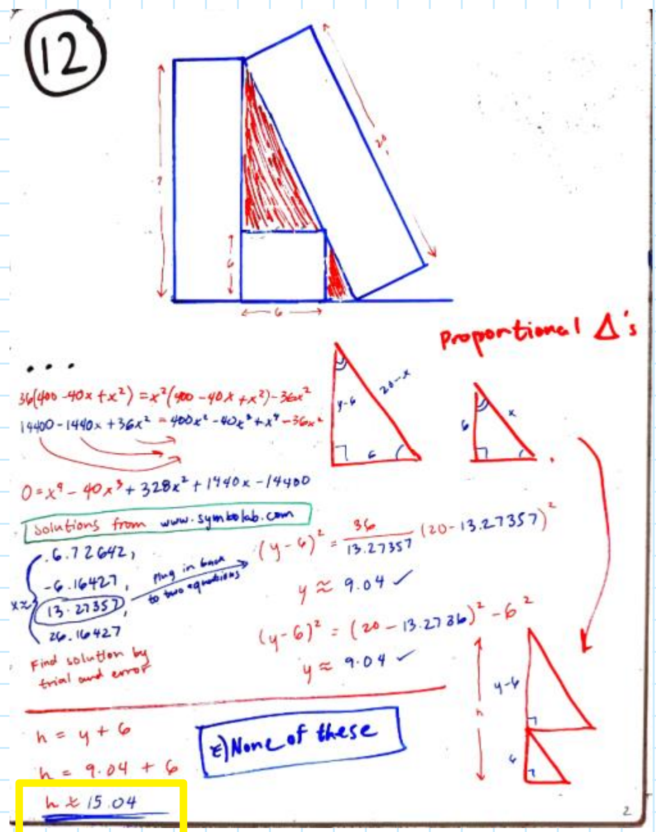
A twenty foot ladder leans up against a perpendicular wall and just touches the outer top edge of a 6x6x6 cube packing case pushed up close to the wall. How far up the wall is the top of the ladder?



hint: if needed use a calculator to solve the equation you derive

Solution from Quiz 8 #12



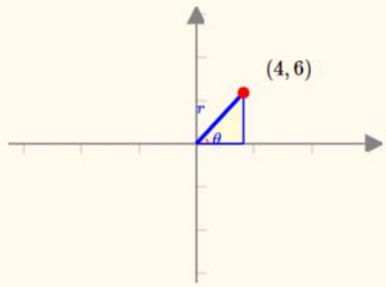


E) None of these

Q7

Saturday, May 30, 2020 9:08 AM

Convert the cartesian coordinates, (4, 6) , to Polar Coordinates



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

$r^2 = 4^2 + 6^2$

$r^2 = 16 + 36$

$\sqrt{r^2} = \sqrt{52}$

$r = \sqrt{52}$

$= \sqrt{4 \cdot 13}$

$r = 2\sqrt{13}$

$\theta = \tan^{-1}\left(\frac{y}{x}\right)$

$= \tan^{-1}\left(\frac{6}{4}\right)$

$\theta \approx 56.31$

or $r = -2\sqrt{13}$, $\theta = (56.31 + 180°)$

$\theta = 236.31°$

$r = -2\sqrt{13}$, $\theta = 236.31°$

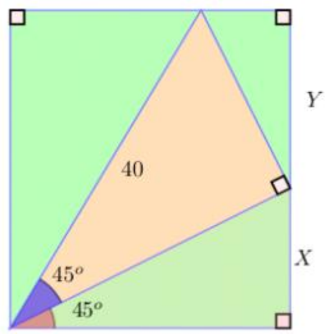
B) $r = 2\sqrt{13}$, $\theta = 56.31°$

C) $r = -2\sqrt{13}$, $\theta = 236.3°$

Q8

Saturday, May 30, 2020 9:42 AM

Determine the value of X and Y.



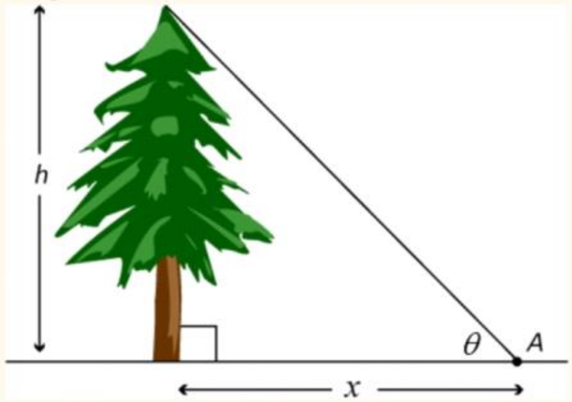
TYPO IN THE QUESTION

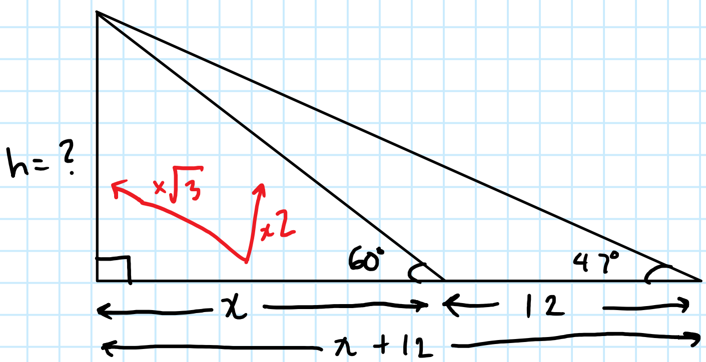
$\boxed{\text{G) None of the above}}$

Q9

Saturday, May 30, 2020 9:43 AM

Suppose you look at a tree from afar and note the angle of elevation is 60^o. From that point, after walking **12** feet away from the tree, you note the angle of elevation decreased to 47^o. Estimate the height of the tree h [do not use ideas from future part of the course].





$\tan 60° = \frac{h}{x}$

$h = x \tan 60°$

$\tan 47° = \frac{h}{x+12}$

$h = \tan 47 (x+12)$

$x \tan 60° = \tan 47° (x+12)$

$x(1.7321) = (1.0724)(x+12)$

$1.7321x = 1.0724x + 12.8684$

$1.7321x - 1.0724x = 12.8684$

$\frac{0.6597x}{0.6597} = \frac{12.8684}{0.6597}$

$\underline{x = 19.5070}$

$h = x\sqrt{3}$

$= 19.5070\sqrt{3}$

$\underline{\underline{h \approx 33.7871}}$

$\boxed{\text{D) } h = 33.787 \text{ ft}}$

Q10

Saturday, May 30, 2020 10:38 AM

Prove the following identity

$$\frac{\tan(x)^2}{\sec(x)+1} + 1 = \frac{1}{\cos(x)}$$

$\sec\theta = \frac{1}{\cos\theta}$

$\tan\theta = \pm\sqrt{\sec^2\theta - 1}$

$\tan^2\theta = \sec^2\theta - 1$

$$\frac{\tan^2(x)}{\sec(x)+1} + 1 = \frac{1}{\cos(x)}$$

$$(\cancel{\sec(x)+1})\ \frac{\tan^2(x)}{\cancel{\sec(x)+1}} + 1 = \sec(x)\ (\sec(x)+1)$$

$$\tan^2(x) + 1 = \sec^2(x) + \sec(x)$$

$$\sec^2(\theta) - 1 + 1 =$$

$$\sec^2(\theta) = \sec^2(x) + \sec(x)$$

$\boxed{\text{A) not identity}}$