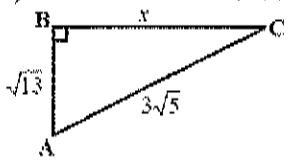
Review for Test on Trigonometry

1) Find the value of x.



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

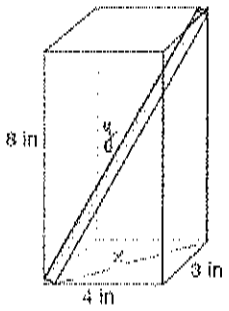
$\sqrt{13}^2+x^2=(3\sqrt{5})^2$

$13+x^2=45$

$x^2=32$

$x=4\sqrt{2}$

2) A straw is placed into a rectangular box that is 3 inches by 4 inches by 8 inches, as shown in the accompanying diagram. If the straw fits exactly into the box diagonally from the bottom left front corner to the top right back corner, how long is the straw, to the *nearest tenth of an inch*?



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

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

$9+16=x^2$

$25=x^2$

$x=5$

$5^2+8^2=y^2$

$25+64=y^2$

$89=y^2$

$y=9.433981132$

$y=9.4$ in

3) Tell whether or not the following sides could be sides of a right triangle.

a) 15, 20, 18

$15^2+18^2=20^2$

$225+324=400$

$549\neq 400$

No

b) $2\sqrt{5}$, 4, 6

4.4

$(2\sqrt{5})^2+4^2=6^2$

$20+16=36$

$36=36$

Yes

c) $\sqrt{2}$, 5, $3\sqrt{3}$

1.4 5.1

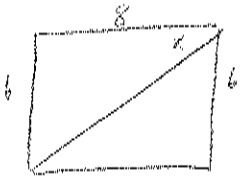
$(\sqrt{2})^2+5^2=(3\sqrt{3})^2$

$2+25=9\cdot 3$

$27=27$

yes

4) The length of a rectangle is 8 cm and its width is 6 cm. Find, to the nearest degree, the angle a diagonal of the rectangle makes with the longer side.



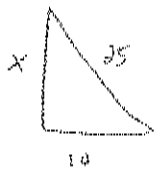
$\tan x=\frac{6}{8}$

$x=\tan^{-1}\left(\frac{6}{8}\right)$

$x=36.86989765$

$x=37°$

5) The foot of the ladder rests 10 feet from the side of a building. The ladder is 25 feet long. To the nearest tenth, how high up the building does the ladder reach?



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

$10^2+x^2=25^2$

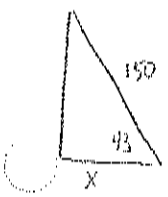
$100+x^2=625$

$x^2=525$

$x=22.91287847$

$x=22.9$ ft

6) A 150 foot guide wire attached to the top of a pole makes an angle of 43° with the ground. Find to the nearest foot the distance between the point where the wire meets ground and the foot of the pole.



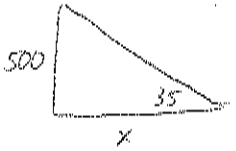
$\cos 43=\frac{x}{150}$

$x=150\cos 43$

$x=109.7030552$

$x=110$ ft

7) An airplane is 500 feet above a school. The angle of elevation of the plane as seen by a boy, some distance away from the school is 35°. Find to the nearest foot how far the boy is from the school.



$\tan 35=\frac{500}{x}$

$x\tan 35=500$

$\frac{x\tan 35}{\tan 35}=\frac{500}{\tan 35}$

$x=714.0740034$

$x=714$ ft