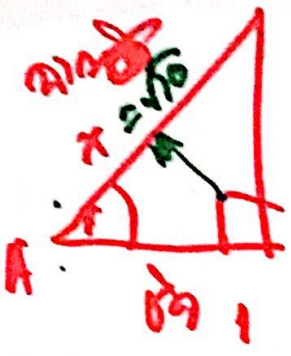
Ex12 ΔABC ซึ่ง $\tan A = 3$ จงหาค่าของ $3\sin^2 A + 4\cos^2 A$

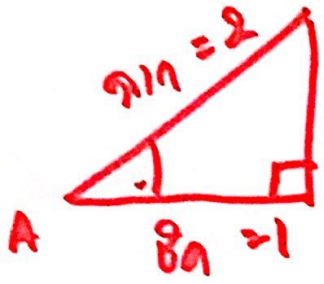


3 ด้านตรงข้าม / 1 ด้านประชิด

$x^2 = 3^2 + 1^2$
$= 9 + 1$
$x^2 = 10$
$x = \sqrt{10}$

$\sin A = 3/\sqrt{10}$
$\cos A = 1/\sqrt{10}$
$3\sin^2 A + 4\cos^2 A$
$= 3\left(\frac{3}{\sqrt{10}}\right)^2 + 4\left(\frac{1}{\sqrt{10}}\right)^2$
$= \frac{27}{10} + \frac{4}{10}$
$= \frac{31}{10}$

Ex13 Δ มุมฉาก ABC ซึ่ง $\sec A = 2$ จงหาค่าของ $\cot^2 A + \sqrt{3}\operatorname{cosec} A$



$\cos A = 1/2$
$2^2 = 1^2 + x^2$
$4 = 1 + x^2$
$x^2 = 3 \therefore x = \sqrt{3}$

$\cot A = \frac{1}{\sqrt{3}}$
$\operatorname{cosec} A = \frac{2}{\sqrt{3}}$

$\cot^2 A + \sqrt{3}\operatorname{cosec} A$
$= \left(\frac{1}{\sqrt{3}}\right)^2 + \sqrt{3}\left(\frac{2}{\sqrt{3}}\right)$
$= \frac{1}{3} + \frac{2\times 3}{3}$
$= \frac{7}{3}$

แบบฝึกหัดที่ 2

1 กำหนดให้ $8\sec A = 17$ จงหา $\sin A$, $\cos A$, $\tan A$

$\sec A = \frac{17}{8}$

$\cos A = \frac{8}{17}$

ด้านตรงข้าม $= 15$

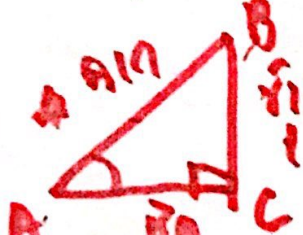
$17^2 = x^2 + 8^2$
$289 = x^2 + 64$
$289 - 64 = x^2$
$225 = x^2$
$x = 15$

$\sin A = 15/17$
$\cos A = 8/17$
$\tan A = 15/8$

2 ถ้า ΔABC มีมุม C เป็นมุมฉาก ถ้า $\operatorname{cosec} A = 4$ จงหา

1) $\sin B + \cos A$ 2) $\cos A - \cos B$

$\operatorname{cosec} A = 4 \Rightarrow \sin A = 1/4$



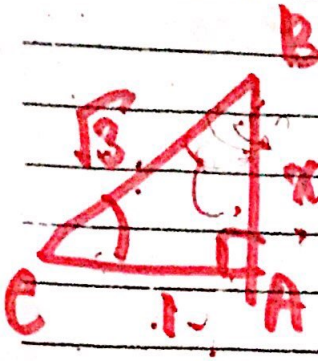
$4^2 = x^2 + 1^2$
$16 = x^2 + 1$
$x^2 = 15$
$x = \sqrt{15}$

1) $\sin B + \cos A$
$= \frac{\sqrt{15}}{4} + \frac{\sqrt{15}}{4}$
$= \frac{1}{2}\left(\frac{\sqrt{15}}{2}\right) = \frac{\sqrt{15}}{2}$

2) $\cos A - \cos B$
$= \frac{\sqrt{15}}{4} - \frac{1}{4}$
$= \frac{\sqrt{15}-1}{4}$

3 รูปสามเหลี่ยม ABC มีมุม A เป็นมุมฉาก ถ้า $\sec C = \sqrt{3}$

จงหา 1) $(\cot B)(\tan C)$ 2) $\sec^2 B$ 3) $\frac{\csc C}{\csc B}$



$\sec C = \sqrt{3}$

$\csc C = \frac{1}{\sqrt{3}}$

$(\sqrt{3})^2 = x^2 + 1^2$

$3 = x^2 + 1$

$x^2 = 2$

$x = \sqrt{2}$

1) $(\cot B)(\tan C)$

$= (\sqrt{2})(\sqrt{2}) = \left(\frac{\sqrt{2}}{1}\right)^2$

$= 2$

2) $\sec^2 B$

$= \left(\frac{\sqrt{3}}{\sqrt{2}}\right)^2 = \frac{\sqrt{3}}{\sqrt{2}} \times \frac{\sqrt{3}}{\sqrt{2}}$

$= \frac{3}{2}$

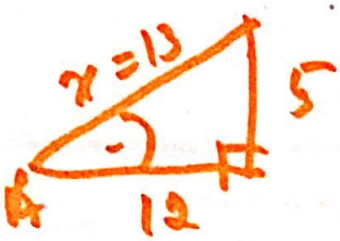
3) $\frac{\csc C}{\csc B} = \frac{\frac{\sqrt{3}}{\sqrt{2}}}{\frac{\sqrt{3}}{1}} = \frac{\sqrt{3}}{\sqrt{2}} \times \frac{1}{\sqrt{3}} = \frac{1}{\sqrt{2}}$

(cosec = 1/csc)

4 $\triangle ABC$ ที่ $\cot A = 2.4$ จงหาค่าของ $2\sin A \cos A$

$\cot A = \frac{24}{10} = \frac{12}{5}$

$\tan A = \frac{5}{12}$



$x^2 = 12^2 + 5^2$

$= 144 + 25$

$x^2 = 169$

$x = 13$

$2\sin A \cos A$

$= 2(\frac{5}{13})(\frac{12}{13})$

$= \frac{120}{169}$

5 $\triangle ABC$ ที่ $5\cos A = 3$ จงหาค่าของ $3\tan A \operatorname{cosec} A$

$5\cos A = 3$

$\cos A = 3/5$

$3\tan A \operatorname{cosec} A$

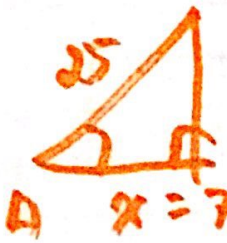
$= 3(\frac{4}{3})(\frac{5}{4})$

$= 5$

6 $\triangle ABC$ ที่ $24\operatorname{cosec} A = 25$ จงหาค่าของ $5\cot A \sec A$

$\operatorname{cosec} A = \frac{25}{24}$

$\sin A = \frac{24}{25}$



$25^2 = x^2 + 24^2$

$625 = x^2 + 576$

$x^2 = 625 - 576$

$x^2 = 49$

$x = 7$

$5\cot A \sec A$

$= 5(\frac{7}{24})(\frac{25}{7})$

$= \frac{125}{24}$