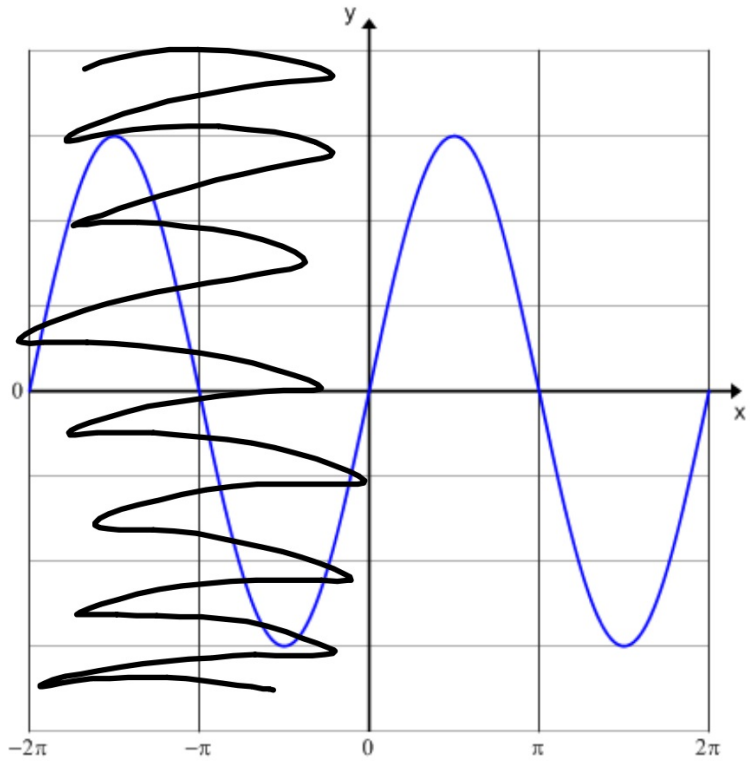
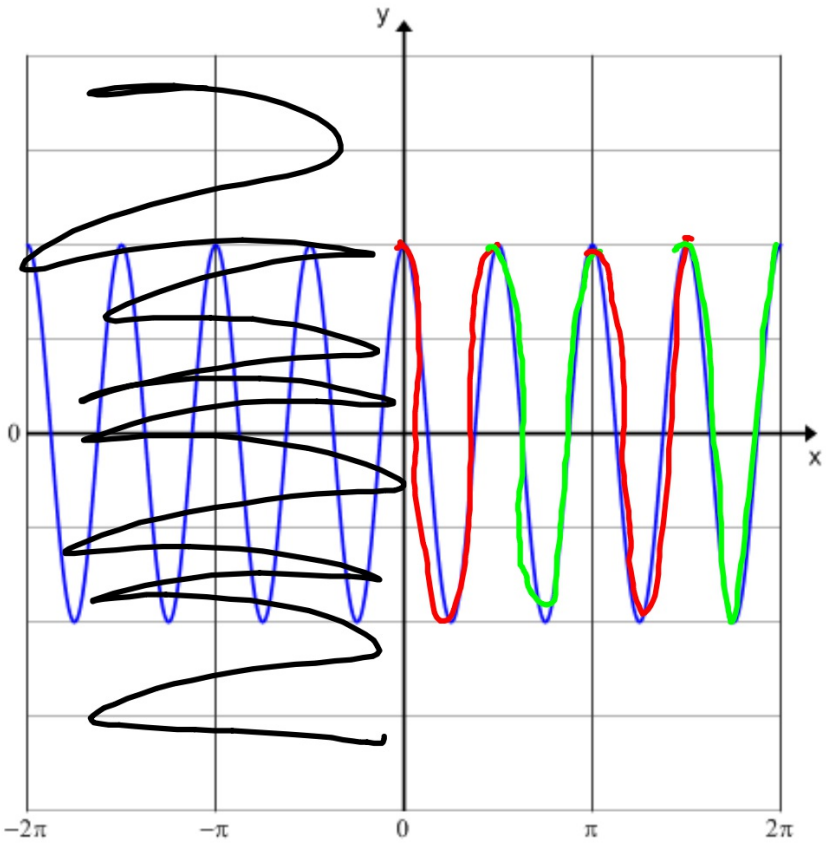
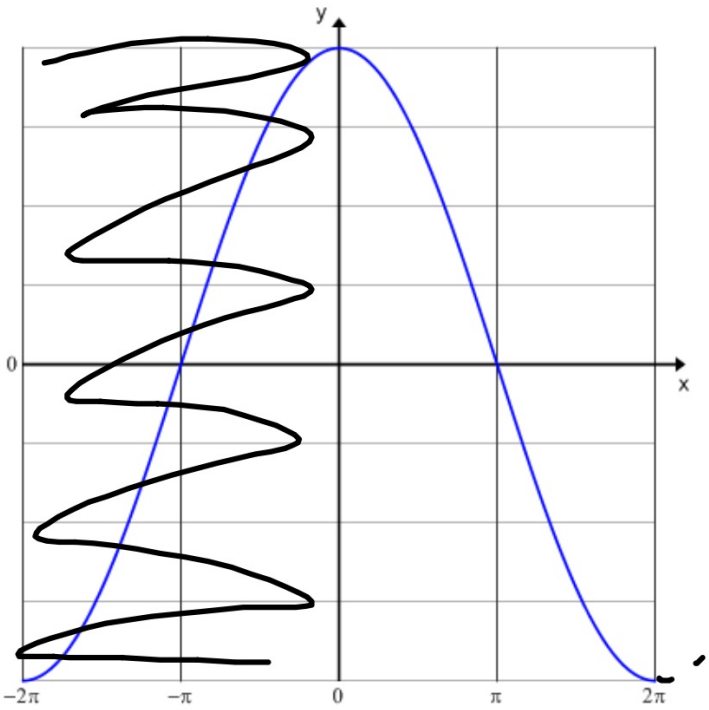
4-9-18 1st Trig




$y = 3\sin\theta$




$y = 2\cos(4\theta)$




$y = 14\cos\left(\frac{1}{2}\theta\right)$

① $y = 5\sin(2\theta + 8)$

amplitude: $5$

period $= \frac{360}{b} = \frac{360}{2} = 180°$

phase shift: $\frac{-c}{b} = \frac{-8}{2} = -4$

② $y = \underline{4}\sin(\underline{4}\theta + \underline{32})$

Amplitude $= 4$ Period: $90°$ P.S. $= -8$

period $= \frac{360}{b}$ → $\frac{90}{1} = \frac{360}{b}$

$90b = 360$

$b = 4$

P.S. $= \frac{-c}{b}$

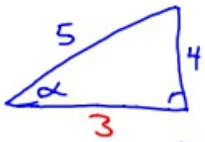
$\frac{-8}{1} = \frac{-c}{4}$

$-c = -32$

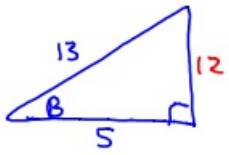
$c = 32$

(3) If $\sin\alpha = \frac{4}{5}$ and $\cos B = \frac{5}{13}$, find $\sin(\alpha + B)$.

$\sin(\alpha \pm B) = \sin\alpha \cdot \cos B \pm \sin B \cdot \cos\alpha$




$a^2 + 4^2 = 5^2$




$5^2 + b^2 = 13^2$

$b^2 = 144$

$b = 12$

$\sin(\alpha + B) = \sin\alpha \cdot \cos B + \sin B \cdot \cos\alpha$

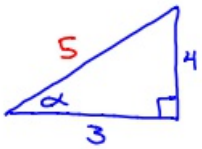
$= \frac{4}{5} \cdot \frac{5}{13} + \frac{12}{13} \cdot \frac{3}{5}$

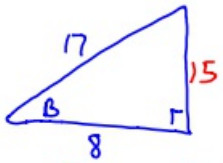
$\frac{20}{65} + \frac{36}{65}$

$\frac{56}{65}$

(4) If $\tan\alpha = \frac{4}{3}$ and $\cos B = \frac{8}{17}$, find $\cos(\alpha - B)$.

$\cos(\alpha \mp B) = \cos\alpha \cdot \cos B \pm \sin\alpha \cdot \sin B$




$8^2 + b^2 = 17^2$

$64 + b^2 = 289$

$-64 \quad -64$

$\sqrt{b^2} = \sqrt{225}$

$b = 15$

$\cos(\alpha - B) = \cos\alpha \cdot \cos B + \sin\alpha \cdot \sin B$

$\frac{3}{5} \cdot \frac{8}{17} + \frac{4}{5} \cdot \frac{15}{17}$

$\frac{24}{85} + \frac{60}{85}$

$\frac{84}{85}$

(5) $y = \frac{1}{\quad} \sin\left(\frac{1}{2}\theta - \frac{20}{\quad}\right)$

period = 720°

phase shift = 40°

$\text{period} = \frac{360}{b}$

$\frac{720}{1} = \frac{360}{b}$

$\frac{720b}{720} = \frac{360}{720}$

$b = \frac{1}{2}$

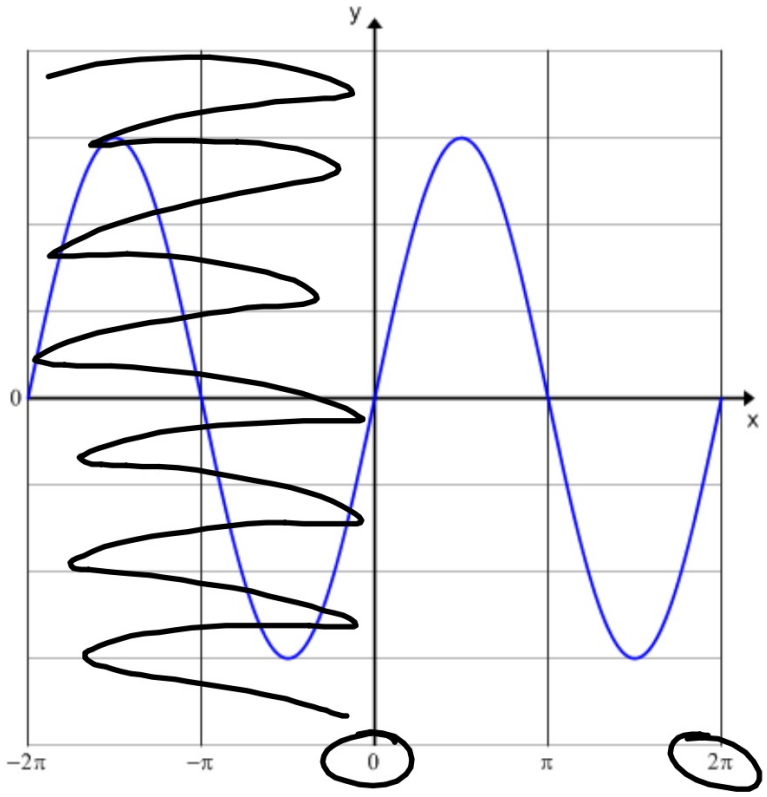
$\text{p.s.} = \frac{-c}{b}$

$\frac{40}{1} = \frac{-c}{\frac{1}{2}}$

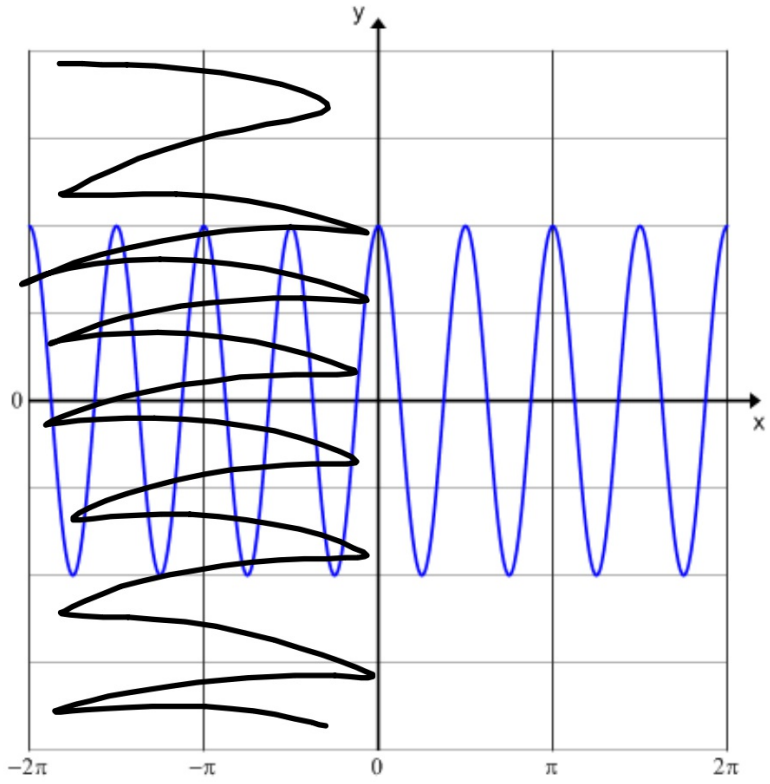
$-c = 20$

$c = -20$

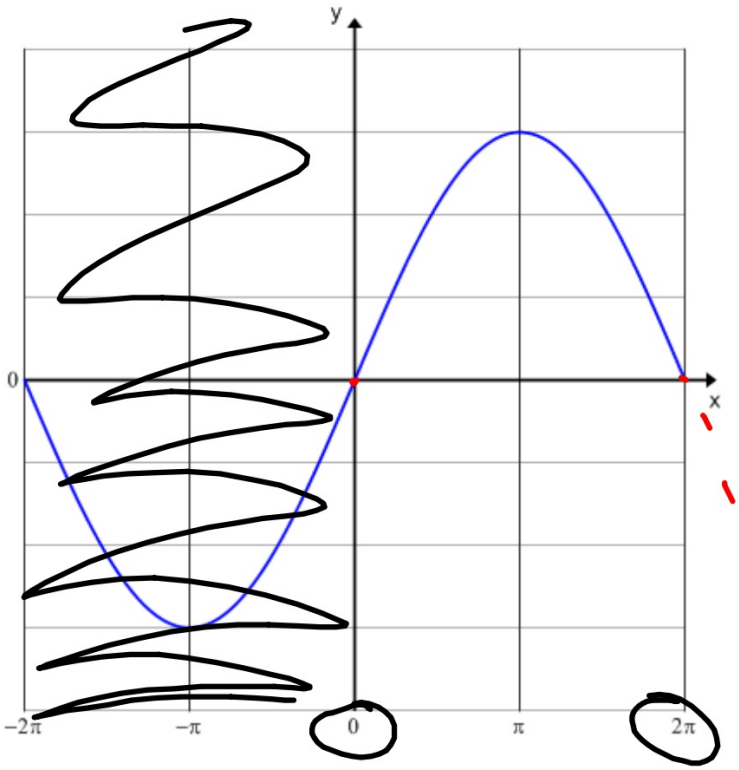
4-9-18 3rd Trig




$y = 3\sin(\theta)$




$y = 2\cos(4\theta)$




$y = 3\sin\left(\frac{1}{2}\theta\right)$

① $y = 3\sin(4\theta - 12)$

amplitude: 3

period: $\frac{360}{b} = \frac{360}{4} = 90^\circ$

phase shift: $\frac{-c}{b} = -\frac{-12}{4} = 3^\circ$

② $y = \underline{8}\sin(\underline{2}\theta + \underline{8})$

amplitude: 8

period: $180^\circ$

phase shift: $-4$

period: $\frac{360}{b}$

$\frac{180}{1} = \frac{360}{b}$

$180b = 360$

$b = 2$

p.s.: $-\frac{c}{b}$

$\frac{-4}{1} = \frac{-c}{2}$

$-c = -8$

$c = 8$

③ $y = \sin(\underline{\frac{1}{2}}\theta - \underline{5})$

period: $720^\circ$

period: $\frac{360}{b}$

$\frac{720}{1} = \frac{360}{b}$

$720b = 360$

$b = \frac{1}{2}$

p.s.: $10^\circ$

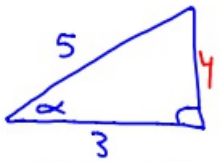
$\frac{10}{1} = \frac{-c}{\frac{1}{2}}$

$-c = 5$

$c = -5$

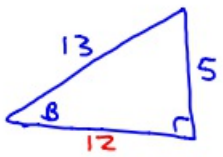
(4) If $\cos\alpha = \frac{3}{5}$ (adj./hyp.) and $\sin\beta = \frac{5}{13}$ (opp./hyp.), find $\sin(\alpha+\beta)$.

$\sin(\alpha \pm \beta) = \sin\alpha\cdot\cos\beta \pm \sin\beta\cos\alpha$




$3^2+b^2=5^2$

$b=4$




$a^2+5^2=13^2$

$a^2+25=169$

$a^2=144$

$a=12$

$\sin(\alpha+\beta) = \sin\alpha\cdot\cos\beta + \sin\beta\cdot\cos\alpha$

$\frac{4}{5}\cdot\frac{12}{13} + \frac{5}{13}\cdot\frac{3}{5}$

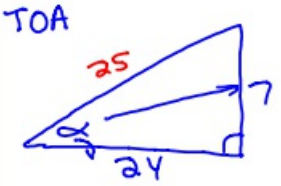
$\frac{48}{65} + \frac{15}{65}$

$\frac{63}{65}$

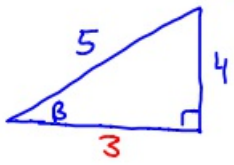
(5) If $\tan\alpha = \frac{7}{24}$ and $\sin\beta = \frac{4}{5}$, find $\cos(\alpha+\beta)$.

$\cos(\alpha \pm \beta) = \cos\alpha\cdot\cos\beta \mp \sin\alpha\cdot\sin\beta$

TOA




SOH




$24^2+7^2=c^2$

$625=c^2$

$c=25$

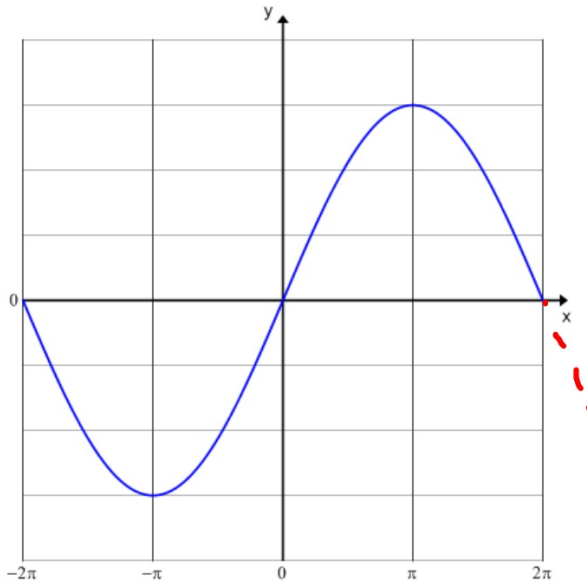
$\cos(\alpha+\beta) = \cos\alpha\cdot\cos\beta - \sin\alpha\cdot\sin\beta$

$\frac{24}{25}\cdot\frac{3}{5} - \frac{7}{25}\cdot\frac{4}{5}$

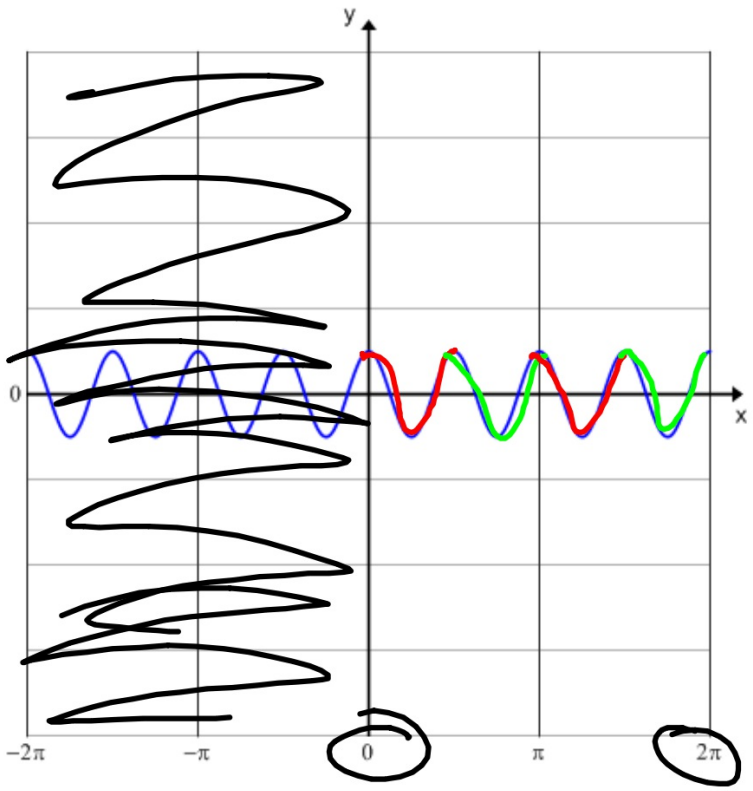
$\frac{72}{125} - \frac{28}{125}$

$\frac{44}{125}$

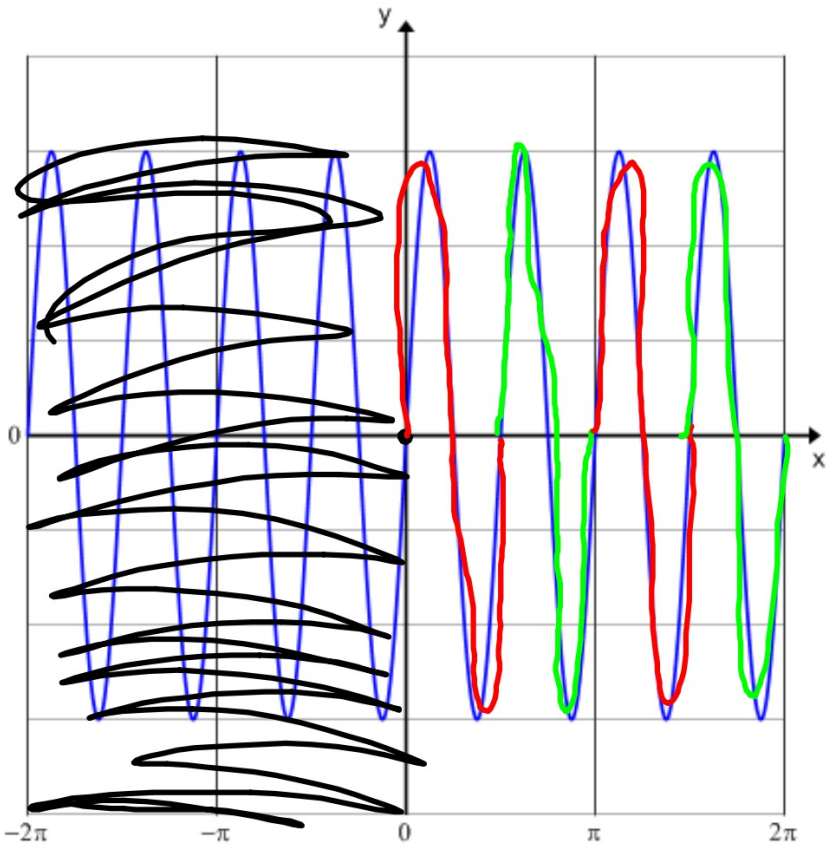
4-9-18 4th Trig




$y = 3\sin\left(\frac{1}{2}\theta\right)$




$y = \frac{1}{2}\cos(4\theta)$




$y = 3\sin(4\theta)$

① $y = 5\sin(\frac{8}{b}\theta - 16)$

amplitude = 5

period $= \frac{360}{b} = \frac{360}{8} = 45°$

phase shift $= \frac{-c}{b} = \frac{--16}{8} = 2$

② $y = \frac{2}{}\sin(\frac{4}{b}\theta - \frac{48}{})$

amplitude = 2

period = 90°

phase shift = 12°

$p.s. = -\frac{c}{b}$

$\frac{12}{1} = \frac{-c}{4}$

$-c = 48$

$c = -48$

$period = \frac{360}{b}$

$\frac{90}{1} = \frac{360}{b}$

$90b = 360$

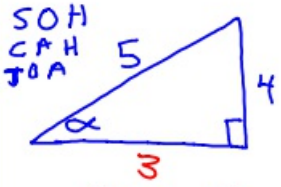
$b = 4$

③ If $\sin\alpha = \frac{4}{5}$ and $\cos B = \frac{7}{25}$, adj, hyp

find $\sin(\alpha + B)$.

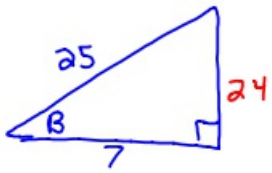
$\sin(\alpha \pm B) = \sin\alpha \cdot \cos B \pm \sin B \cdot \cos\alpha$

SOH
CAH
TOA




$a^2 + 4^2 = 5^2$

$a = 3$




$7^2 + b^2 = 25^2$

$b = 24$

$\sin(\alpha + B) = \sin\alpha \cdot \cos B + \sin B \cdot \cos\alpha$

$\frac{4}{5} \cdot \frac{7}{25} + \frac{24}{25} \cdot \frac{3}{5}$

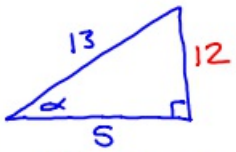
$\frac{28}{125} + \frac{72}{125}$

$\frac{100}{125} = \frac{4}{5}$

④ If $\cos\alpha = \frac{5}{13}$ and $\sin B = \frac{24}{25}$,

find $\cos(\alpha - B)$.

$\cos(\alpha \mp B) = \cos\alpha \cdot \cos B \mp \sin\alpha \cdot \sin B$

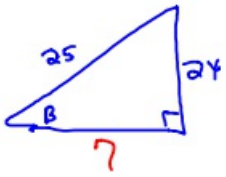



$5^2 + b^2 = 13^2$

$25 + b^2 = 169$

$b^2 = 144$

$b = 12$




$\cos(\alpha - B) = \cos\alpha \cdot \cos B + \sin\alpha \cdot \sin B$

$\frac{5}{13} \cdot \frac{7}{25} + \frac{12}{13} \cdot \frac{24}{25}$

$\frac{35}{325} + \frac{288}{325}$

$\frac{323}{325}$

⑥ $y = \cos\left(\frac{1}{2}\theta - 1\right)$

period = 720°

phase shift = 2°

$\text{period} = \frac{360}{b}$

$\frac{720}{1} = \frac{360}{b}$

$720b = 360$

$b = \frac{1}{2}$

$\text{p.s.} = \frac{-c}{b}$

$\frac{2}{1} = \frac{-c}{\frac{1}{2}}$

$-c = 1$

$c = -1$