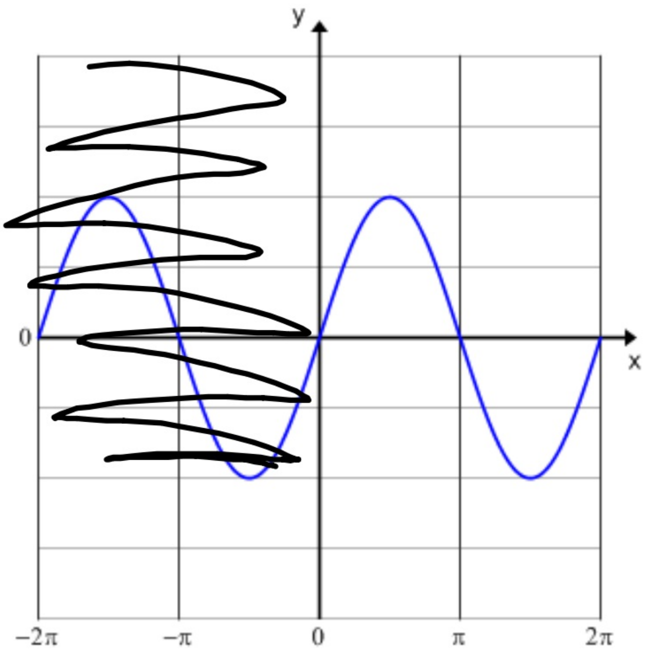
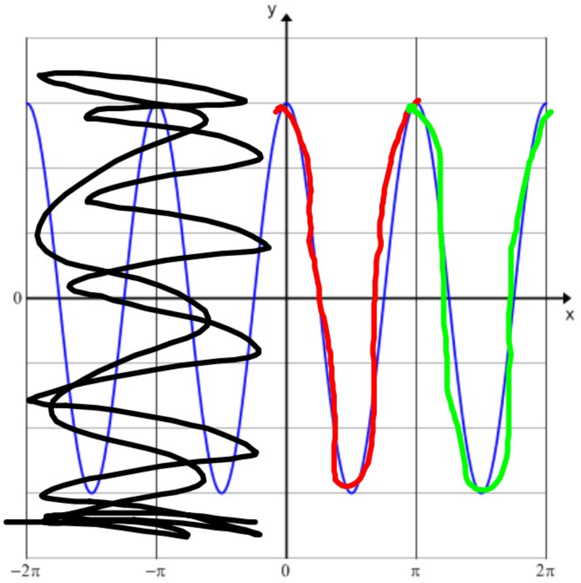
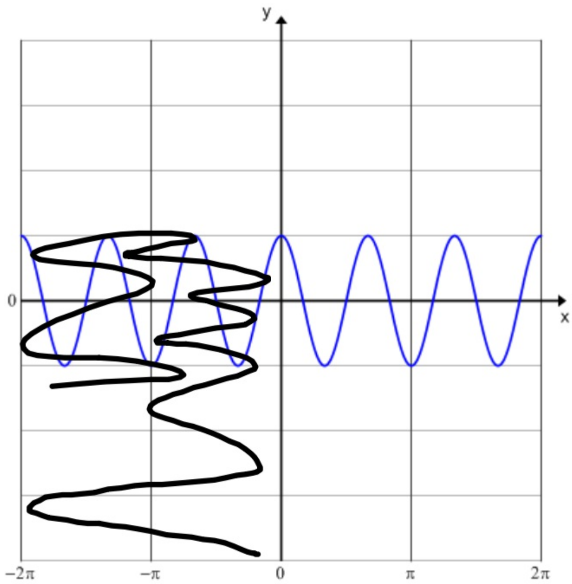
4-3-18 1st Trig



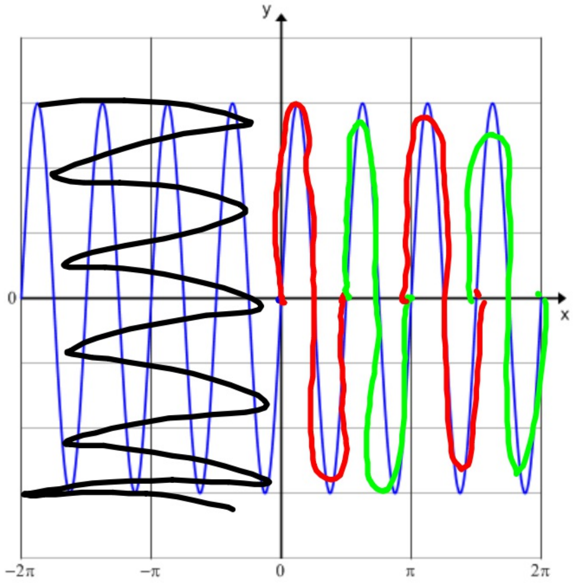
$y = 2\sin\Theta$



$y = 3\cos(2\theta)$



$$y = \cos(3\theta)$$



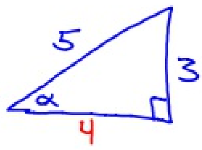
$$y = 3\sin(4\theta)$$

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

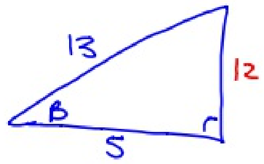
$\sin(\alpha \pm \beta) = \sin\alpha \cdot \cos\beta \pm \sin\beta \cdot \cos\alpha$

① If $\sin\alpha = \frac{3}{5}$ and $\cos\beta = \frac{5}{13}$, find $\cos(\alpha - \beta)$.

α Δ



β Δ



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

$25 + b^2 = 169$

$b^2 = 144$

$b = 12$

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

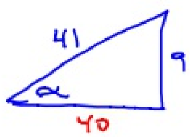
$\frac{4}{5} \cdot \frac{5}{13} + \frac{3}{5} \cdot \frac{12}{13}$

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

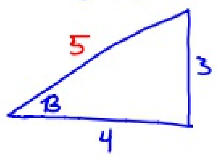
$\frac{56}{65}$

② If $\sin\alpha = \frac{9}{41}$ and $\tan\beta = \frac{3}{4}$, find $\sin(\alpha + \beta)$.

α Δ



β Δ



$a^2 + 9^2 = 41^2$

$a^2 + 81 = 1681$

$a^2 = 1600$

$a = 40$

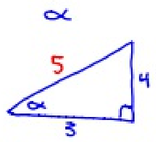
$\sin(\alpha + \beta) = \sin\alpha \cdot \cos\beta + \sin\beta \cdot \cos\alpha$

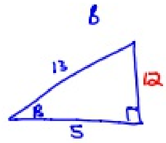
$\frac{9}{41} \cdot \frac{4}{5} + \frac{3}{5} \cdot \frac{40}{41}$

$\frac{36}{205} + \frac{120}{205}$

$\frac{156}{205}$

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





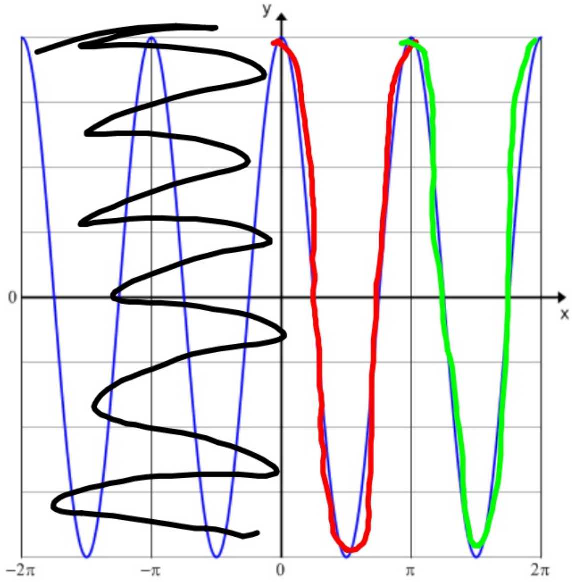
$$\sin(\alpha-\beta) = \sin\alpha \cdot \cos\beta - \sin\beta \cdot \cos\alpha$$

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

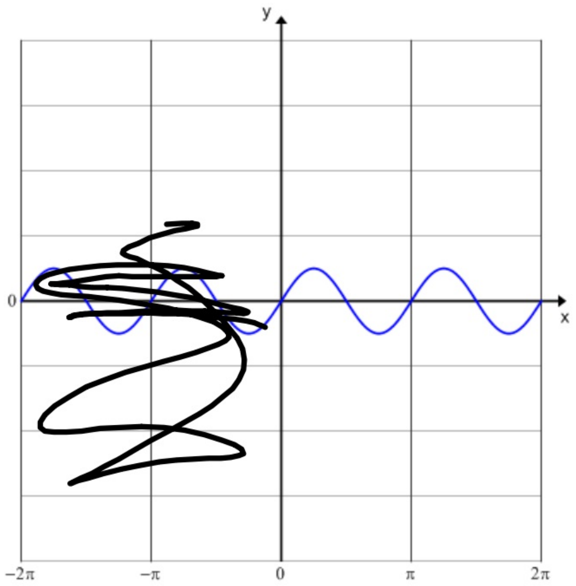
$$\frac{20}{65} - \frac{36}{65}$$

$$\frac{-16}{65}$$

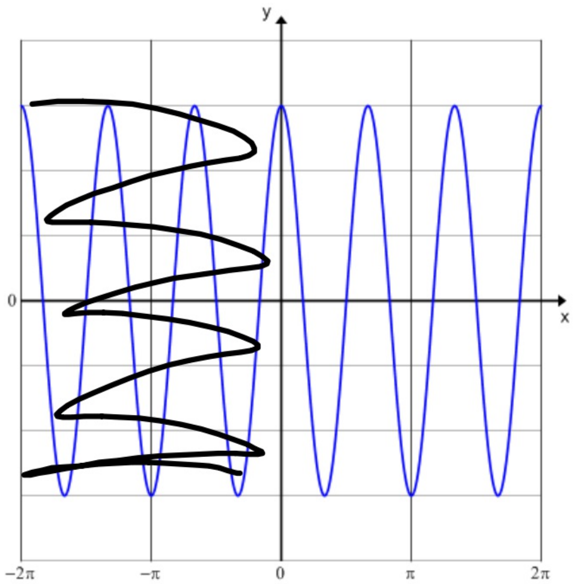
4-3-18 3rd Trig



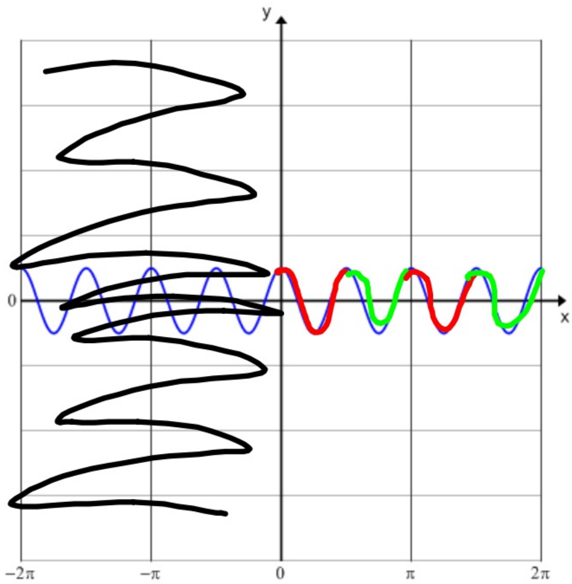
$y = 4\cos(\underline{2}\theta)$



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



$$y = 3\cos(3\theta)$$



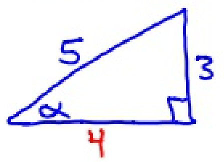
$y = \frac{1}{2}\cos(4\theta)$

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

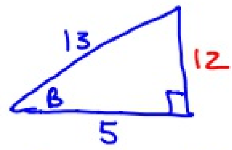
$\sin(\alpha \pm B) = \sin\alpha \cdot \cos B \pm \sin B \cdot \cos\alpha$

① If $\sin\alpha = \frac{3}{5}$ and $\cos B = \frac{5}{13}$, find $\cos(\alpha - B)$.

α triangle



B triangle



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

$25 + b^2 = 169$

$b^2 = 144$

$b = 12$

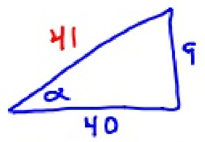
$\cos(\alpha - B) = \cos\alpha \cdot \cos B + \sin\alpha \cdot \sin B$

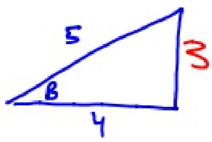
$\frac{4}{5} \cdot \frac{5}{13} + \frac{3}{5} \cdot \frac{12}{13}$

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

$\frac{56}{65}$

② If $\tan\alpha = \frac{9}{40}$ and $\cos B = \frac{4}{5}$, find $\sin(\alpha + B)$.





$40^2 + 9^2 = c^2$

$c = 41$

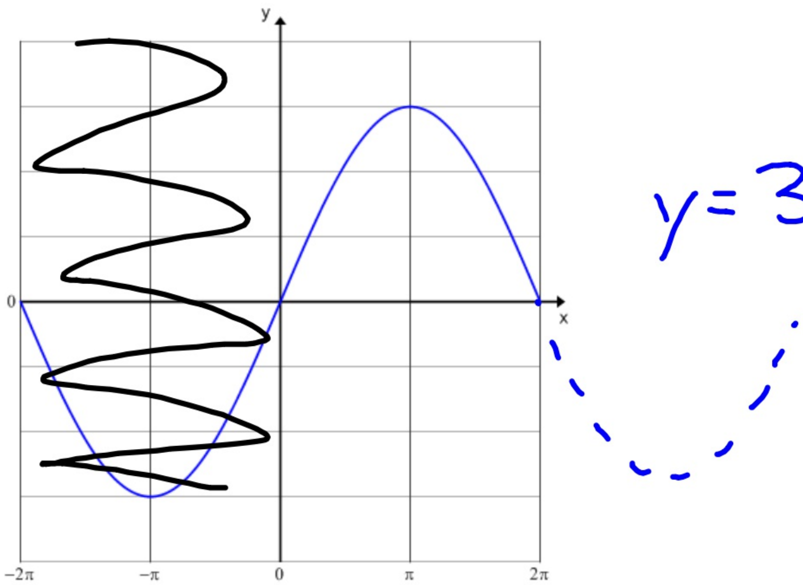
$\sin(\alpha + B) = \sin\alpha \cdot \cos B + \sin B \cdot \cos\alpha$

$\frac{9}{41} \cdot \frac{4}{5} + \frac{3}{5} \cdot \frac{40}{41}$

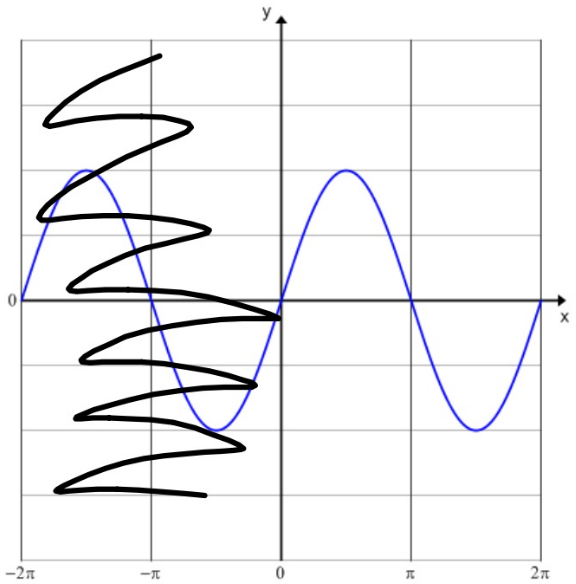
$\frac{36}{205} + \frac{120}{205}$

$\frac{156}{205}$

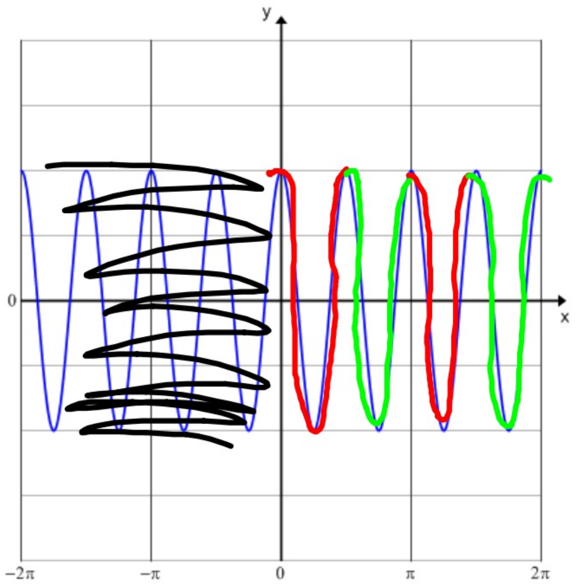
4-3-18 4th Trig



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



$y = 2 \sin \theta$



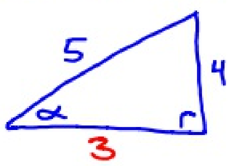
$$y = 2\cos(4\theta)$$

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

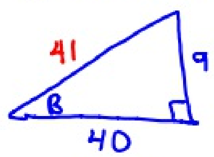
$$\sin(\alpha \pm \beta) = \sin\alpha \cdot \cos\beta \pm \sin\beta \cdot \cos\alpha$$

① If $\sin\alpha = \frac{4}{5}$ and $\tan\beta = \frac{9}{40}$, find $\cos(\alpha - \beta)$.

α triangle



β triangle



$$40^2 + 9^2 = c^2$$

$$c = 41$$

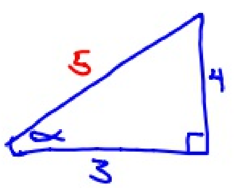
$$\cos(\alpha - \beta) = \cos\alpha \cdot \cos\beta + \sin\alpha \cdot \sin\beta$$

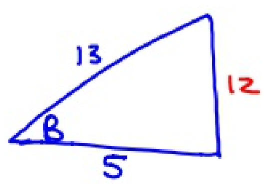
$$\frac{3}{5} \cdot \frac{40}{41} + \frac{4}{5} \cdot \frac{9}{41}$$

$$\frac{120}{205} + \frac{36}{205}$$

$$\frac{156}{205}$$

② If $\tan\alpha = \frac{4}{3}$ and $\cos\beta = \frac{5}{13}$, find $\sin(\alpha + \beta)$.





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

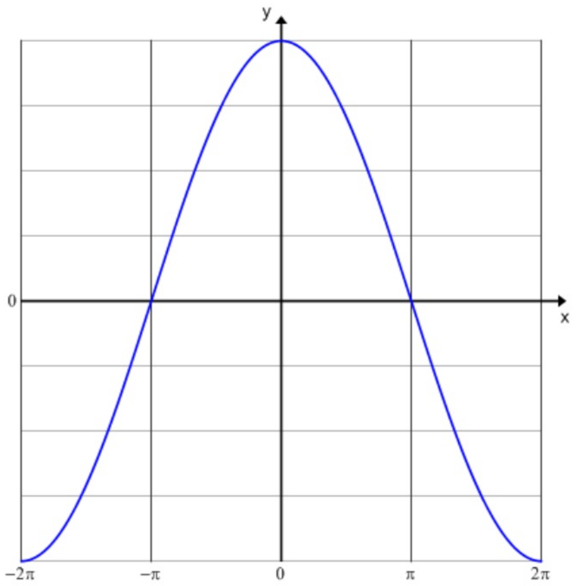
$$b = 12$$

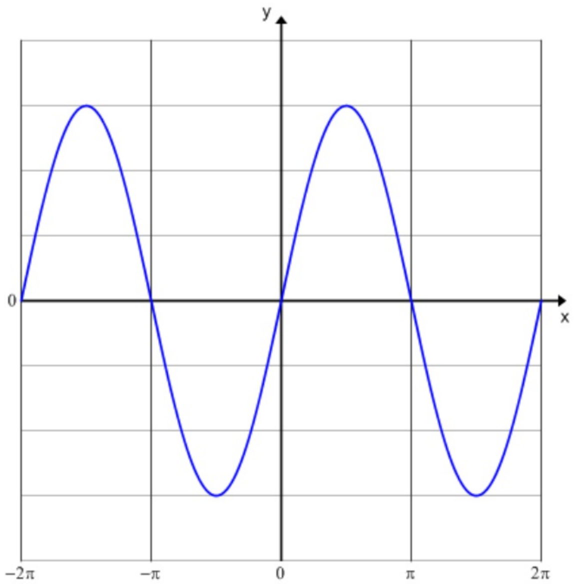
$$\sin(\alpha + \beta) = \sin\alpha \cdot \cos\beta + \sin\beta \cdot \cos\alpha$$

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

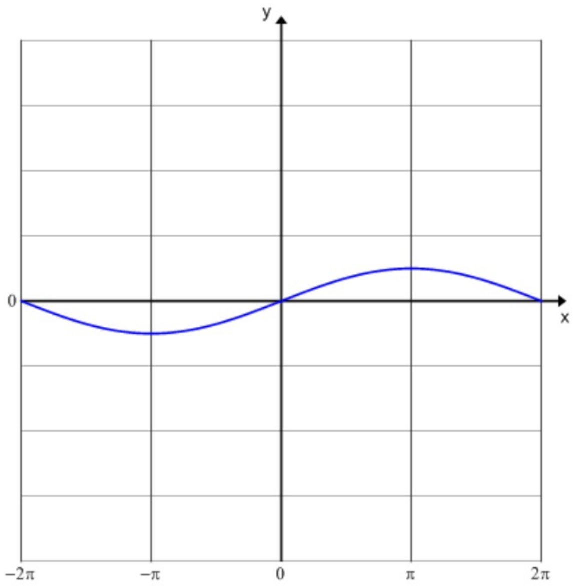
$$\frac{20}{65} + \frac{36}{65}$$

$$\frac{56}{65}$$


y
x
0
−2π
−π
0
π
2π



y
x
0
−2π
−π
0
π
2π



y
x
0
−2π
−π
0
π
2π