[illegible]

$\sin^{-1}(-0.538461538)=\alpha$

$\alpha=-0.5686203$

$\pi-\alpha=\beta=3.71022295$

$2\pi-\alpha=\theta=6.85179561$

$\alpha\times\frac{365}{2\pi}=-33.0314561$

~~$\beta\times\frac{365}{2\pi}=149.468$~~

$\beta\times\frac{365}{2\pi}=215.531456$ ✓

$C(t)=-15\cos\left(\frac{2\pi}{15}t\right)+65$ [08]

$75=-15\cos\left(\frac{2\pi}{15}t\right)+65$

$\frac{10}{-15}=\cos\left(\frac{2\pi}{15}t\right)$

$\cos^{-1}(-0.666666667)=\alpha$

$\alpha=2.30052398$

$\pi-\alpha=\beta=0.84106871$

$2\pi-\alpha=\theta=3.98266132$

→ 75 dB = 5.5 ✓

$\alpha\times\frac{15}{2\pi}=5.49209646$

$D(t)=-21\cos\left(\frac{2\pi}{29.5}t\right)+384$ [09]

Min → t = ~~6.5~~

$360=-21\cos\left(\frac{2\pi}{29.5}t\right)+384$

$\frac{-4}{-21}=\cos\left(\frac{2\pi}{29.5}t\right)$

$\cos^{-1}(0.190476190)=\alpha$

$\alpha=1.37914913$

$\pi-\alpha=\beta=1.76244352$ ✓

$2\pi-\alpha=\theta=4.90403618$

$\alpha\times\frac{29.5}{2\pi}=6.4752028546$

$W(t)=15\cos\left(\frac{2\pi}{365}t\right)+43$ [10]

Water Level (cm)

$30=15\cos\left(\frac{2\pi}{365}t\right)+43$

$\frac{-13}{15}=\cos\left(\frac{2\pi}{365}t\right)$

$\cos^{-1}(-0.866666667)=\alpha$

$\alpha=2.61927783$

$\pi-\alpha=\beta=0.52231482$

$2\pi-\alpha=\theta=3.66390748$ ✓

$\alpha\times\frac{365}{2\pi}=152.157920$

$H(t)=12\sin\left(\frac{2\pi}{24}t\right)+15$ [11]

2° 17 kg = 11.4

$17=12\sin\left(\frac{2\pi}{24}t\right)+15$

$\frac{2}{12}=\sin\left(\frac{2\pi}{24}t\right)$

$\sin^{-1}(0.166666667)=\alpha$

$\alpha=0.167448079$

$\pi-\alpha=\beta=2.97414457$

$2\pi-\alpha=\theta=3.66390748$

$\beta\times\frac{24}{2\pi}=11.3603955$ ✓

$L(t)=52\sin\left(\frac{2\pi}{365}t\right)+728$ [12]

Spring → t → 750 = 25d

$750=52\sin\left(\frac{2\pi}{365}t\right)+728$

$\frac{22}{52}=\sin\left(\frac{2\pi}{365}t\right)$

$\sin^{-1}(0.423076923)=\alpha$

~~$\alpha=1.13395778$~~

~~$\pi-\alpha=\beta=2.00763478$~~

~~$2\pi-\alpha=\theta=5.14922745$~~

$\alpha=0.436838450$

$\pi-\alpha=\beta=2.70475420$

$2\pi-\alpha=\theta=5.84634666$ ✓

$\alpha\times\frac{365}{2\pi}=25.3766245$

06/10/2018 [13]

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

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

$\cot(\theta)=\frac{1}{\tan(\theta)}$

$\tan(\theta)=\frac{\sin(\theta)}{\cos(\theta)}$

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

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

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

$\sin(a+b)=\sin a\cos b+\sin b\cos a$

$\sin(a+(-c))=$

$\sin a\cos(-c)+\sin(-c)\cos a$

$\cos(-c)=\cos c$

$\sin(-c)=-\sin c$

$\sin(a-c)=\sin a\cos c-\sin c\cos a$

$\cos(a+b)=\cos a\cos b-\sin a\sin b$

$\cos(a-b)=\cos a\cos b+\sin a\sin b$

$\cos(2a)=\cos(a+a)=$

$\cos(a)\cos(a)-\sin(a)\sin(a)=$

$\boxed{\cos^2 a-\sin^2 a}$

$\sin^2 a+\cos^2 a=1$

$\sin^2 a=1-\cos^2 a$

$\cos^2 a-(1-\cos^2 a)=$

$\cos^2 a-1+\cos^2 a=$

$\boxed{2\cos^2 a-1=\cos 2a}$

$2\cos^2 a=\cos 2a+1$

$\cos^2 a=\frac{1}{2}(1+\cos 2a)$

$\cos^2 a=1-\sin^2 a$

$\cos(2a)=(1-\sin^2 a)$ [illegible]

$\boxed{\cos 2a=1-2\sin^2 a}$

$2\sin^2 a+\cos 2a=1$

$2\sin^2 a=1-\cos 2a$

$\boxed{\sin^2 a=\frac{1}{2}(1-\cos 2a)}$

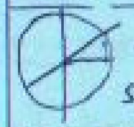
$\sin(2a)=\sin(a+a)=\sin a\cos a+\sin a\cos a=$

$\boxed{2\sin a\cos a}$

$\sin(\angle BAC+60°)$

~~$\sin(a)\cos(b)+\sin b$~~

~~$\cos a$~~



$\angle BAC$

$\sin(x\pm y)=$

$\sin x\cos y\pm\cos x\sin y$

For w.04:

$\sin(BAC+60)=$

$\sin(\angle BAC)\cdot\cos(60°)+$

$\cos(60°)+\cos(\angle BAC)\cdot$

$\sin(60°)$

$\sin(\angle BAC)=\frac{O}{H}=\frac{BC}{AB}=\frac{12}{13}$

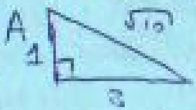
$\cos(60°)=\frac{1}{2}$

$\cos(\angle BAC)=\frac{A}{H}=\frac{AC}{AB}=\frac{5}{13}$

$\sin(60°)=\frac{\sqrt{3}}{2}$ ✓

$\frac{12}{13}\cdot\frac{1}{2}+\frac{5}{13}\cdot\frac{\sqrt{3}}{2}=\frac{6}{13}+\frac{5\sqrt{3}}{26}$

$\cos(2\angle BAC)$ [14]



$\cos(2a)=\cos(a)\cos(a)-\sin(a)\sin(a)$

$\cos^2(a)-\sin^2(a)$

$\cos^2\left(\frac{3}{\sqrt{10}}\right)-\sin^2(a)$

$\sin^2(a)=\cos\left(\frac{9}{10}\right)$

$\frac{3}{\sqrt{10}}\cdot\frac{3}{\sqrt{10}}-\frac{1}{\sqrt{10}}\cdot\frac{1}{\sqrt{10}}=\frac{8}{\sqrt{10}}$

$\cos(2a)=1-2\sin^2 a$

$\frac{10}{10}-2\left(\frac{1}{\sqrt{10}}\cdot\frac{1}{\sqrt{10}}\right)$

$1-\frac{2}{10}=\frac{8}{10}$

$\cos(2a)=\frac{8}{10}=0.8$

$\cos(2x)=\cos^2(x)-\sin^2(x)$

$\cos(2BAC)=\cos^2(BAC)-\sin^2(BAC)$

$\cos^2=\left(\frac{1}{\sqrt{10}}\right)^2=\frac{1}{10}$

$\sin^2=\left(\frac{3}{\sqrt{10}}\right)^2=\frac{9}{10}$

$\frac{1}{10}-\frac{9}{10}=-\frac{4}{5}$ ✓

✓ [15]

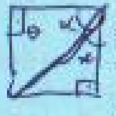
θ = 35°

x =

180 − θ = α = 145°

x = 180 − α = 35°

[16]



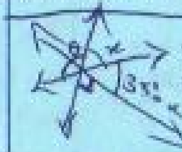
θ = 90

α = 45°

x = 45°

x = 90 − 45 = 45° ✓

[17]



α = 35

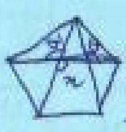
θ = 45°

x = 55°

✓

x = 180 − 90 − 35 = 55°

[18]



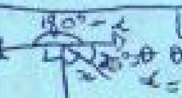
θ = 100°

θ' = 100°

x = 100°

x = 180 − 80 = 100° ✓

[19]

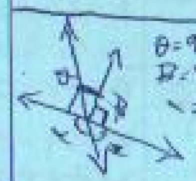


θ = 25

α = 180

x = 90 − 25 = 65° ✓

[20]



θ = 90°

β = 90°

α = 120°

x =

x = 180 − 120 = 60° ✓

[21]

θ = 75°

α = 60°

β = 95°

x = 180 − 85 = 95° ✓

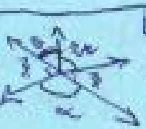
[22]

θ = 100°

2x = 180 − 100 = 80

x = 80/2 = 40° ✓

04/12/18 [23]



2x =

θ = 50°

α = 150°

β = 30°

~~2x = 180 − 30 = 150~~

~~$x=\frac{150}{2}=75$~~ ✓

2x = 180 − 50 − 30 = 100°

$x=\frac{100°}{2}=50°$

[24]

x =

θ = (3x + 10°)

x = 90 − (3x + 10°) ✓

x = −3x + 80°

4x = 80° $x=\frac{80}{4}=20°$

[25]

θ = 40°

α = (2x + 30°)

x = 35°

α = 180 − 2(θ) = 100°

2x + 30° = 100°

$x=\frac{70°}{2}=35°$

[26]

α = 60°

α = 120°

x = 80° ✓

θ = 20° [4]

α = (6x − 2)

6x − 2 = 90 − 20 = 70

$x=\frac{72}{6}=12°$ ✓

[25]

θ = 100°

x = 20

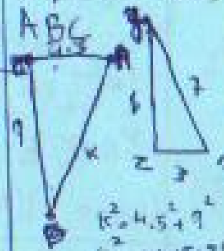
3x = 180 − 100 − x

4x = 80 $x=\frac{80}{4}$ ✓

[26]

XYZ similar

ABC

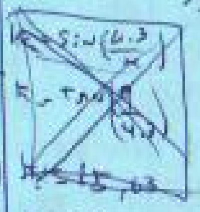


$k^2=4.5^2+9^2$

$k^2=20.25+81$

$k^2=101.25$

$k=\sqrt{101.25}=10.06$



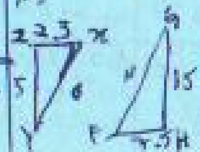
$\frac{k}{7}=\frac{4.5}{3}=\frac{9}{6}=\frac{3}{2}$

$\frac{k}{7}=\frac{3}{2}$ $k=\frac{3}{2}\cdot 7$

k = 10.5 ✓

XYZ ≈ FGH [27]

N =



$\frac{N}{5}=\frac{7.5}{2.5}=3$ ✓

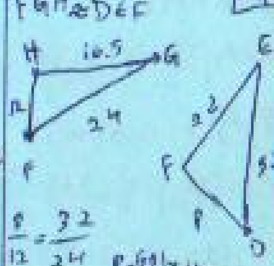
$\frac{N}{6}=3$ N = 3×6 = 1

SKL ≈ PQR [

$\frac{t}{1.5}=\frac{2.5}{5}$, t = 5 × 1.5 ✓

t = 7.5

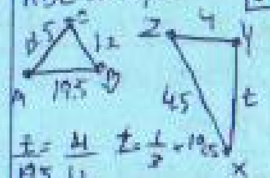
FGH ≈ DEF [2



$\frac{p}{12}=\frac{32}{24}$ $p=\left(\frac{32}{24}\right)\cdot 12$

p = 16 ✓

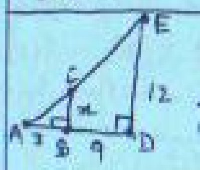
ABC ≈ XYZ [30



$\frac{t}{19.5}=\frac{4}{12}$ $t=\frac{1}{3}\cdot 19.5$

t = 6.5 ✓

[31



$\frac{AE}{AC}=\frac{12}{x}$

$\frac{12}{3}=\frac{12}{x}$ x = 3 ✓

[3

$\frac{x}{4}=\frac{11}{6}$

$x=\frac{44}{6}$

x = 7.33

$k=\frac{22}{3}$