FP2: Hafaliadau Trigonometreg

Haf 2006

⑤ $3\cos\theta + 4\sin\theta = 3 - \tan\left(\frac{\theta}{2}\right)$

$t = \tan\left(\frac{\theta}{2}\right)$ felly $\sin\theta = \frac{2t}{1+t^2}$; $\cos\theta = \frac{1-t^2}{1+t^2}$.

Felly $3\left(\frac{1-t^2}{1+t^2}\right) + 4\left(\frac{2t}{1+t^2}\right) = 3 - t$

$3(1-t^2) + 4(2t) = (3-t)(1+t^2)$

$3 - 3t^2 + 8t = 3 + 3t^2 - t - t^3$

$t^3 - 6t^2 + 9t = 0$

$t(t^2 - 6t + 9) = 0$

$t(t-3)(t-3) = 0$.

Unai $t = 0$ neu $t - 3 = 0$

$t = 3$

$\tan\left(\frac{\theta}{2}\right) = 0$

S | A
T | C

$\frac{\theta}{2} = \tan^{-1}(0)$.

$\frac{\theta}{2} = \ldots, -2\pi, -\pi, 0, \pi, 2\pi, \ldots$

$\theta = \ldots, -4\pi, -2\pi, 0, 2\pi, 4\pi, \ldots$

$\theta = 2n\pi$ ar gyfer cyfanrif n.

$\tan\left(\frac{\theta}{2}\right) = 3$

$\frac{\theta}{2} = \tan^{-1}(3)$

S | ~~A~~
~~T~~ | C

$\frac{\theta}{2} = 1.249045772 + n\pi$

$\theta = 2.498091545 + 2n\pi$

$\theta = 2.498 + 2n\pi$ ar gyfer cyfanrif n. (i 3 ll.d.)

Haf 2007

(4) $\sin 2\theta + \sin 4\theta = \cos\theta$

$$\sin A + \sin B = 2\sin\left(\frac{A+B}{2}\right)\cos\left(\frac{A-B}{2}\right)$$

$$\sin 2\theta + \sin 4\theta = 2\sin\left(\frac{2\theta+4\theta}{2}\right)\cos\left(\frac{2\theta-4\theta}{2}\right)$$

$$= 2\sin 3\theta \cos(-\theta)$$

$$= 2\sin 3\theta\cos\theta$$ trwy gymesuredd graff $\cos\theta$.

Felly $2\sin 3\theta\cos\theta = \cos\theta$

$2\sin 3\theta\cos\theta - \cos\theta = 0$

$\cos\theta(2\sin 3\theta - 1) = 0$

Unai $\cos\theta = 0$ neu $2\sin 3\theta - 1 = 0$

$\theta = \cos^{-1}(0)$

$\theta = 2n\pi \pm \frac{\pi}{2}$

ar gyfer cyfanrif n.

Felly unai $\theta = 2n\pi + \frac{\pi}{2}$

neu $\theta = 2n\pi - \frac{\pi}{2}$

$2\sin 3\theta = 1$

$\sin 3\theta = \frac{1}{2}$

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

$3\theta = n\pi + (-1)^n\left(\frac{\pi}{6}\right)$

$\theta = \frac{n\pi}{3} + (-1)^n\left(\frac{\pi}{18}\right)$

ar gyfer cyfanrif n.

Haf 2008

④ $2\sin\theta + 3\cos\theta = 1$

(a) $t = \tan\left(\frac{\theta}{2}\right)$ felly $\sin\theta = \frac{2t}{1+t^2}$; $\cos\theta = \frac{1-t^2}{1+t^2}$

$$2\left(\frac{2t}{1+t^2}\right) + 3\left(\frac{1-t^2}{1+t^2}\right) = 1$$

$$2(2t) + 3(1-t^2) = 1+t^2$$

$$4t + 3 - 3t^2 = 1 + t^2$$

$$0 = 1 - 3 + t^2 + 3t^2 - 4t$$

$$0 = 4t^2 - 4t - 2$$

$$0 = 2t^2 - 2t - 1$$

$2t^2 - 2t - 1 = 0$. ✓

(b) $2t^2 - 2t - 1 = 0$

~~$(2t \quad 1)(t \quad 1) = 0$~~ ×

$$t = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$t = \frac{2 \pm \sqrt{(-2)^2 - 4(2)(-1)}}{2\times 2}$$

$$t = \frac{2 \pm \sqrt{12}}{4}$$

Unai $t = \frac{2+\sqrt{12}}{4}$ neu $t = \frac{2-\sqrt{12}}{4}$

$t = 1.366025404$

$\tan\left(\frac{\theta}{2}\right) = 1.366025404$

$\frac{\theta}{2} = \tan^{-1}(1.366025404)$

$\frac{\theta}{2} = 0.9388820145 + n\pi$

$\theta = 1.877764029 + 2n\pi$

$\theta = 1.878 + 2n\pi$ ar gyfer cyfanrif n (i 3 lle degol).

$t = -0.3660254038$

$\tan\left(\frac{\theta}{2}\right) = -0.3660254038$

$\frac{\theta}{2} = \tan^{-1}(-0.3660254038)$

$\frac{\theta}{2} = -0.3508794109 + n\pi$

$\theta = -0.7017588217 + 2n\pi$

$\theta = -0.702 + 2n\pi$ ar gyfer cyfanrif n (i 3 lle degol).

Haf 2009

(4) $\sin\theta + \sin 2\theta + \sin 3\theta = 0$

$\sin\theta + \sin 3\theta + \sin 2\theta = 0$

$\sin A + \sin B = 2\sin\left(\frac{A+B}{2}\right)\cos\left(\frac{A-B}{2}\right)$

$\sin\theta + \sin 3\theta = 2\sin\left(\frac{\theta+3\theta}{2}\right)\cos\left(\frac{\theta-3\theta}{2}\right)$

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

$= 2\sin 2\theta\cos\theta$ trwy gymesuredd graff $\cos\theta$

Felly $2\sin 2\theta\cos\theta + \sin 2\theta = 0$

$\sin 2\theta(2\cos\theta + 1) = 0$

Unai $\sin 2\theta = 0$ neu $2\cos\theta + 1 = 0$

S | A
T | C

$2\theta = \sin^{-1}(0)$

$2\theta = n\pi$

$\theta = \frac{n\pi}{2}$.

ar gyfer cyfanrif n

$2\cos\theta = -1$

$\cos\theta = -\frac{1}{2}$

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

S | A
T | C

$\theta = 2n\pi \pm \frac{2\pi}{3}$

Felly unai $\theta = 2n\pi + \frac{2\pi}{3}$

neu $\theta = 2n\pi - \frac{2\pi}{3}$

ar gyfer cyfanrif n.

Haf 2010

③ $5\sin x - 5\cos x = 1$

$t = \tan\left(\frac{x}{2}\right)$ felly $\sin x = \frac{2t}{1+t^2}$; $\cos x = \frac{1-t^2}{1+t^2}$

$$5\left(\frac{2t}{1+t^2}\right) - 5\left(\frac{1-t^2}{1+t^2}\right) = 1$$

$$5(2t) - 5(1-t^2) = 1+t^2$$

$$10t - 5 + 5t^2 = 1 + t^2$$

$$4t^2 + 10t - 6 = 0$$

$$2t^2 + 5t - 3 = 0 \quad \checkmark$$

$$(2t-1)(t+3) = 0$$

Unai $2t-1=0$

$2t = 1$

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

S | A
T | C

$\tan\left(\frac{x}{2}\right) = \frac{1}{2}$

$\frac{x}{2} = \tan^{-1}\left(\frac{1}{2}\right)$

$\frac{x}{2} = n\pi + 0.463647609$

$x = 2n\pi + 0.927295218$

$x = 2n\pi + 0.927$

ar gyfer cyfanrif n (i 3 ll.d.)

neu $t+3=0$

$t = -3$

$\tan\left(\frac{x}{2}\right) = -3$

S | A
T | C

$\frac{x}{2} = \tan^{-1}(-3)$

$\frac{x}{2} = n\pi - 1.249045772$

$x = 2n\pi - 2.498091545$

$x = 2n\pi - 2.498$

ar gyfer cyfanrif n (i 3 ll.d.)

Haf 2011

(2) $\cos\theta + \cos 3\theta + \cos 5\theta = 0$

$\cos\theta + \cos 5\theta + \cos 3\theta = 0$

$\cos A + \cos B = 2\cos\left(\frac{A+B}{2}\right)\cos\left(\frac{A-B}{2}\right)$

$\cos\theta + \cos 5\theta = 2\cos\left(\frac{\theta+5\theta}{2}\right)\cos\left(\frac{\theta-5\theta}{2}\right)$

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

$= 2\cos 3\theta \cos 2\theta$ trwy gymesuredd graff cos.

Felly $2\cos 3\theta\cos 2\theta + \cos 3\theta = 0$

$\cos 3\theta(2\cos 2\theta + 1) = 0$.

Unai $\cos 3\theta = 0$

S	A
T	C

$3\theta = \cos^{-1}(0)$

$3\theta = 2n\pi \pm \frac{\pi}{2}$

$\theta = \frac{2n\pi}{3} \pm \frac{\pi}{6}$

Felly unai $\theta = \frac{2n\pi}{3} + \frac{\pi}{6}$

neu $\theta = \frac{2n\pi}{3} - \frac{\pi}{6}$

ar gyfer cyfanrif n.

neu $2\cos 2\theta + 1 = 0$

$2\cos 2\theta = -1$

$\cos 2\theta = -\frac{1}{2}$

S	A
T	C

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

$2\theta = 2n\pi \pm \frac{2\pi}{3}$

$\theta = n\pi \pm \frac{\pi}{3}$

Felly unai $\theta = n\pi + \frac{\pi}{3}$

neu $\theta = n\pi - \frac{\pi}{3}$

ar gyfer cyfanrif n.

Haf 2012

③ $3\sin x = \tan\left(\frac{x}{2}\right)$

$t = \tan\left(\frac{x}{2}\right)$ felly $\sin x = \frac{2t}{1+t^2}$.

Felly $3\left(\frac{2t}{1+t^2}\right) = t$

$6t = t(1+t^2)$

$0 = t + t^3 - 6t$

$0 = t^3 - 5t$

$0 = t(t^2-5)$

Unai $t=0$ neu $t^2-5=0$

$\tan\left(\frac{x}{2}\right)=0$ $t^2=5$

$\frac{x}{2}=\tan^{-1}(0)$ $t=\pm\sqrt{5}$

$\frac{x}{2}=n\pi$

$x=2n\pi$

ar gyfer cyfanrif n

S | A
T | C

$t=\sqrt{5}$

$\tan\left(\frac{x}{2}\right)=\sqrt{5}$

$\frac{x}{2}=\tan^{-1}(\sqrt{5})$

$\frac{x}{2}=n\pi+1.150261992$

$x=2n\pi+2.300523983$

$x=2n\pi+2.301$

ar gyfer cyfanrif n
(i 3 lle degol)

$t=-\sqrt{5}$

$\tan\left(\frac{x}{2}\right)=-\sqrt{5}$

$\frac{x}{2}=\tan^{-1}(-\sqrt{5})$

$\frac{x}{2}=n\pi-1.150261992$

$x=2n\pi-2.300523983$

$x=2n\pi-2.301$

ar gyfer cyfanrif n
(i 3 lle degol).

Haf 2013

(2) $\sin\theta + 3\cos\theta = 2$

(a) $t = \tan\left(\frac{\theta}{2}\right)$ Felly $\sin\theta = \frac{2t}{1+t^2}$; $\cos\theta = \frac{1-t^2}{1+t^2}$.

$$\frac{2t}{1+t^2} + 3\left(\frac{1-t^2}{1+t^2}\right) = 2$$

$$2t + 3(1-t^2) = 2(1+t^2)$$

$$2t + 3 - 3t^2 = 2 + 2t^2$$

$$0 = 5t^2 - 2t - 1$$

$$5t^2 - 2t - 1 = 0 \quad \checkmark$$

(b) $5t^2 - 2t - 1 = 0$

$$t = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$$

$$t = \frac{2 \pm \sqrt{(-2)^2 - 4\times 5 \times -1}}{2\times 5}$$

$$t = \frac{2 \pm \sqrt{24}}{10}$$

Unai $t = \frac{2+\sqrt{24}}{10}$ neu $t = \frac{2-\sqrt{24}}{10}$

$\tan\left(\frac{\theta}{2}\right) = \frac{2+\sqrt{24}}{10}$ $\tan\left(\frac{\theta}{2}\right) = \frac{2-\sqrt{24}}{10}$

$\frac{\theta}{2} = \tan^{-1}\left(\frac{2+\sqrt{24}}{10}\right)$

$\frac{\theta}{2} = n\pi + 0.6039138391$

$\theta = 2n\pi + 1.207827678$

$\theta = 2n\pi + 1.208$

ar gyfer cytanrif n (i 3 lle degol)

$\frac{\theta}{2} = \tan^{-1}\left(\frac{2-\sqrt{24}}{10}\right)$

$\frac{\theta}{2} = -0.2821632847 + n\pi$

$\theta = 2n\pi - 0.5643265694$

$\theta = 2n\pi - 0.564$

ar gyfer cytanrif n (i 3 lle degol)

FP2 Haf 2014

(5) $\sin\theta + \sin 5\theta = \cos 2\theta$

$\sin A + \sin B = 2\sin\left(\frac{A+B}{2}\right)\cos\left(\frac{A-B}{2}\right)$

$\sin\theta + \sin 5\theta = 2\sin\left(\frac{\theta+5\theta}{2}\right)\cos\left(\frac{\theta-5\theta}{2}\right)$

$= 2\sin 3\theta \cos(-2\theta)$

$= 2\sin 3\theta \cos 2\theta$ trwy gymesuredd graff $\cos\theta$

Felly $2\sin 3\theta\cos 2\theta = \cos 2\theta$

$2\sin 3\theta\cos 2\theta - \cos 2\theta = 0$

$\cos 2\theta(2\sin 3\theta - 1) = 0$

Unai $\cos 2\theta = 0$

$2\theta = \cos^{-1}(0)$

$2\theta = 2n\pi \pm \frac{\pi}{2}$

$\theta = n\pi \pm \frac{\pi}{4}$

ar gyfer cyfanrif n.

Felly unai $\theta = n\pi + \frac{\pi}{4}$

neu $\theta = n\pi - \frac{\pi}{4}$

neu $2\sin 3\theta - 1 = 0$

$2\sin 3\theta = 1$

$\sin 3\theta = \frac{1}{2}$

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

$3\theta = n\pi + (-1)^n\left(\frac{\pi}{6}\right)$

$\theta = \frac{n\pi}{3} + (-1)^n\left(\frac{\pi}{18}\right)$

ar gyfer cyfanrif n

FP2 Haf 2015

(4) $\cos\left(\theta+\frac{\pi}{6}\right)+\cos\left(2\theta+\frac{\pi}{6}\right)+\cos\left(3\theta+\frac{\pi}{6}\right)=0$

$\cos\left(\theta+\frac{\pi}{6}\right)+\cos\left(3\theta+\frac{\pi}{6}\right)+\cos\left(2\theta+\frac{\pi}{6}\right)=0$

$\cos A+\cos B=2\cos\left(\frac{A+B}{2}\right)\cos\left(\frac{A-B}{2}\right)$

$\cos\left(\theta+\frac{\pi}{6}\right)+\cos\left(3\theta+\frac{\pi}{6}\right)=2\cos\left(\frac{\theta+\frac{\pi}{6}+3\theta+\frac{\pi}{6}}{2}\right)\times\cos\left(\frac{\theta+\frac{\pi}{6}-3\theta-\frac{\pi}{6}}{2}\right)$

$\cos\left(\theta+\frac{\pi}{6}\right)+\cos\left(3\theta+\frac{\pi}{6}\right)=2\cos\left(\frac{4\theta+\frac{2\pi}{6}}{2}\right)\cos\left(\frac{-2\theta}{2}\right)$

$\cos\left(\theta+\frac{\pi}{6}\right)+\cos\left(3\theta+\frac{\pi}{6}\right)=2\cos\left(2\theta+\frac{\pi}{6}\right)\cos(-\theta)$

Felly'r hafaliad i ddatrys yw

$2\cos\left(2\theta+\frac{\pi}{6}\right)\cos(-\theta)+\cos\left(2\theta+\frac{\pi}{6}\right)=0$

$\cos\left(2\theta+\frac{\pi}{6}\right)\left[2\cos(-\theta)+1\right]=0$

Unai $\cos\left(2\theta+\frac{\pi}{6}\right)=0$

S | A
T | C

$2\theta+\frac{\pi}{6}=\cos^{-1}(0)$

$2\theta+\frac{\pi}{6}=2n\pi\pm\frac{\pi}{2}$

Unai $2\theta+\frac{\pi}{6}=2n\pi+\frac{\pi}{2}$

$2\theta=2n\pi+\frac{\pi}{3}$

$\underline{\theta=n\pi+\frac{\pi}{6}}$

Neu $2\theta+\frac{\pi}{6}=2n\pi-\frac{\pi}{2}$

$2\theta=2n\pi-\frac{2\pi}{3}$

$\underline{\theta=n\pi-\frac{\pi}{3}}$ ← ar gyfer cyfanrifn

neu $2\cos(-\theta)+1=0$

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

S | A
T | C

$\cos\theta=-\frac{1}{2}$ trwy gymesuredd graff cos

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

$\theta=2n\pi\pm\frac{2\pi}{3}$

[Unai $\underline{\theta=2n\pi+\frac{2\pi}{3}}$

Neu $\underline{\theta=2n\pi-\frac{2\pi}{3}}$

ar gyfer cyfanrifn]

FP2 Haf 2016

④ $\sin x + \tan x + \tan\left(\frac{x}{2}\right) = 0$

$t = \tan\left(\frac{x}{2}\right)$ felly $\sin x = \frac{2t}{1+t^2}$, $\cos x = \frac{1-t^2}{1+t^2}$,

$\tan x = \frac{2t}{1-t^2}$ $\left(\text{sef } \frac{\sin x}{\cos x}\right)$

Felly $\frac{2t}{1+t^2} + \frac{2t}{1-t^2} + t = 0$

$\frac{2t(1-t^2) + 2t(1+t^2) + t(1+t^2)(1-t^2)}{(1+t^2)(1-t^2)} = 0$

$2t(1-t^2) + 2t(1+t^2) + t(1-t^4) = 0$

$2t - 2t^3 + 2t + 2t^3 + t - t^5 = 0$

$5t - t^5 = 0$

$t(5-t^4) = 0$

Naill ai $t = 0$ neu $5 - t^4 = 0$

$5 = t^4$

$t = \sqrt[4]{5}$ neu $t = -\sqrt[4]{5}$

$\tan\left(\frac{x}{2}\right) = 0$

$\frac{x}{2} = \tan^{-1}(0)$

S	A
T	C

$\frac{x}{2} = \ldots, -2\pi, -\pi, 0, \pi, 2\pi, \ldots$

$x = \ldots, -4\pi, -2\pi, 0, 2\pi, 4\pi, \ldots$

$x = 2n\pi$ ar gyfer cyfanrifn

$\tan\left(\frac{x}{2}\right) = \sqrt[4]{5}$

$\frac{x}{2} = \tan^{-1}(\sqrt[4]{5})$

S	A
T	C

$\frac{x}{2} = 0.9813595011 + n\pi$

$x = 1.962719002 + 2n\pi$

$x = 1.963 + 2n\pi$ ar gyfer cyfanrif n. (i 3 ll.d.)

S	A
T	C

Neu $x = -1.963 + 2n\pi$ ar gyfer cyfanrif n. (i 3 ll.d.)

FP2 Haf 2017

5) $\cos\theta - \cos 5\theta = \sin 3\theta$

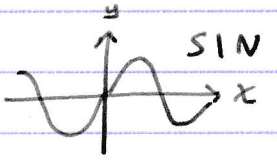
$$\cos A - \cos B = -2\sin\left(\frac{A+B}{2}\right)\sin\left(\frac{A-B}{2}\right)$$

$$= -2\sin\left(\frac{\theta+5\theta}{2}\right)\sin\left(\frac{\theta-5\theta}{2}\right)$$

$$= -2\sin(3\theta)\sin(-2\theta)$$

$$= -2\sin(3\theta)(-\sin(2\theta))$$

$$= 2\sin 3\theta \sin 2\theta$$



Felly $\cos\theta - \cos 5\theta = \sin 3\theta$

$2\sin 3\theta \sin 2\theta = \sin 3\theta$

$2\sin 3\theta \sin 2\theta - \sin 3\theta = 0$

$\sin 3\theta(2\sin 2\theta - 1) = 0$

Naill ai $\sin 3\theta = 0$

$3\theta = \sin^{-1}(0)$

$3\theta = n\pi$

$\theta = \frac{n\pi}{3}$

ar gyfer cyfanrif n

neu $2\sin 2\theta - 1 = 0$

$\sin 2\theta = \frac{1}{2}$

$2\theta = \sin^{-1}\left(\frac{1}{2}\right)$

$2\theta = n\pi + (-1)^n\left(\frac{\pi}{6}\right)$

$\theta = \frac{n\pi}{2} + (-1)^n\left(\frac{\pi}{12}\right)$

ar gyfer cyfanrif n.

FP2 Haf 2018

4) $\sec x + \tan x = 2$

a) $t = \tan\left(\frac{x}{2}\right)$ Felly $\sin x = \frac{2t}{1+t^2}$; $\cos x = \frac{1-t^2}{1+t^2}$

$\sec x + \tan x = 2$

$\frac{1}{\cos x} + \frac{\sin x}{\cos x} = 2$

$\frac{1}{\frac{1-t^2}{1+t^2}} + \frac{\frac{2t}{1+t^2}}{\frac{1-t^2}{1+t^2}} = 2$

$\frac{1+t^2}{1-t^2} + \frac{2t}{1+t^2} \times \frac{1+t^2}{1-t^2} = 2$

$\frac{1+t^2}{1-t^2} + \frac{2t}{1-t^2} = 2$

$1+t^2 + 2t = 2(1-t^2)$

$1+t^2 + 2t = 2-2t^2$

$3t^2 + 2t - 1 = 0$ ✓

b) $3t^2 + 2t - 1 = 0$

$(3t-1)(t+1) = 0$

Naill ai $3t-1=0$ neu $t+1=0$

$3t = 1$ $\quad$ $t = -1$

$t = \frac{1}{3}$ $\quad$ $\tan\left(\frac{x}{2}\right) = -1$

S | A
T | C

$\tan\left(\frac{x}{2}\right) = \frac{1}{3}$

$\frac{x}{2} = \tan^{-1}\left(\frac{1}{3}\right)$

$\frac{x}{2} = n\pi + 0.3217505544$

$x = 2n\pi + 0.6435011088$

$x = 2n\pi + 0.644$

ar gyfer cyfanrif n (i 3 ll.d.)

$\frac{x}{2} = \tan^{-1}(-1)$

$\frac{x}{2} = n\pi - \frac{\pi}{4}$

$x = 2n\pi - \frac{\pi}{2}$

ar gyfer cyfanrif n

Felly $x = \ldots, -\frac{5}{2}\pi, -\frac{1}{2}\pi, \frac{3\pi}{2}, \frac{7\pi}{2}, \ldots$

OND nid yw $\tan x$ wedi ddiffinio ar gyfer y gwerthoedd ymafelly nid ydywir rhain yn ddatrysiadau.

FP2 Haf 2019

3) a) $3\sin x + \cos x = 2$

$t = \tan\left(\frac{x}{2}\right)$ felly $\sin x = \frac{2t}{1+t^2}$, $\cos x = \frac{1-t^2}{1+t^2}$

Felly $3\left(\frac{2t}{1+t^2}\right) + \frac{1-t^2}{1+t^2} = 2$

$6t + 1 - t^2 = 2(1+t^2)$

$6t + 1 - t^2 = 2 + 2t^2$

$0 = 3t^2 - 6t + 1$

$3t^2 - 6t + 1 = 0$ ✓

b) $3\sin x + \cos x = 2$

$3t^2 - 6t + 1 = 0$

$t = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$t = \frac{6 \pm \sqrt{(-6)^2 - 4(3)(1)}}{2\times 3}$

$t = \frac{6 \pm \sqrt{24}}{6}$

Naill ai $t = \frac{6+\sqrt{24}}{6}$ neu $t = \frac{6-\sqrt{24}}{6}$

$t = 1.816496581$ $t = 0.1835034191$

S | A / T | C

$\tan\left(\frac{x}{2}\right) = 1.816496581$ $\tan\left(\frac{x}{2}\right) = 0.1835034191$

$\frac{x}{2} = \tan^{-1}(1.816496581)$ $\frac{x}{2} = \tan^{-1}(0.1835034191)$

$\frac{x}{2} = 61.16676535^\circ + 180^\circ n$ $\frac{x}{2} = 10.39828583^\circ + 180^\circ n$

$x = 122^\circ + 360^\circ n$ $x = 21^\circ + 360^\circ n$

ar gyfer cyfanrif n, ir radd agosaf

ar gyfer cyfanrif n, ir radd agosaf