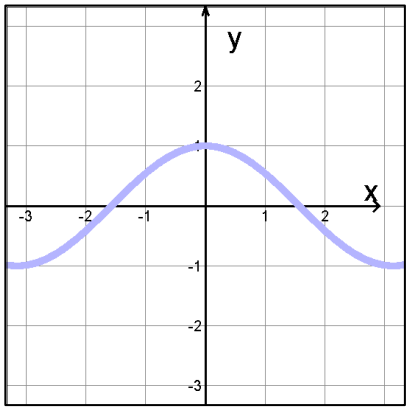
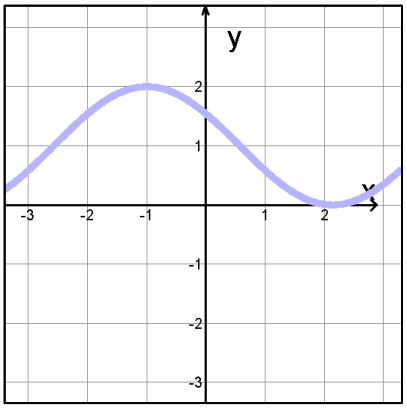
Några uppgifter om att transformera funktionsgrafer

1. Till vänster ritas grafen till funktionen $f(x)$ och till höger visas en transformerad version av den. Ta fram ett funktionsuttryck för den transformade grafen.

a)

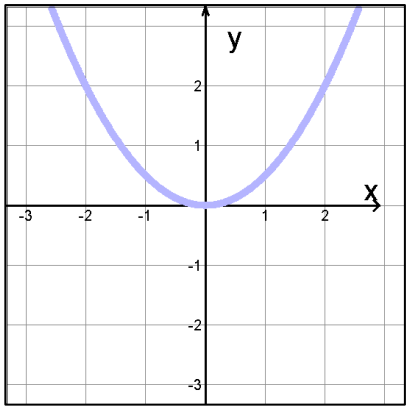
$f(x)$

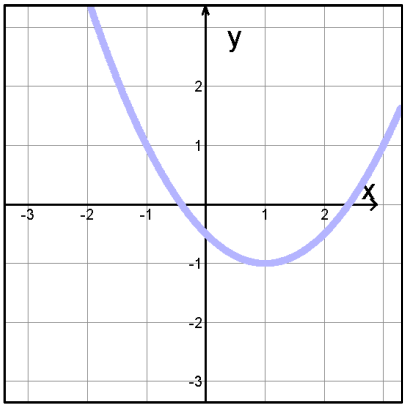




b)

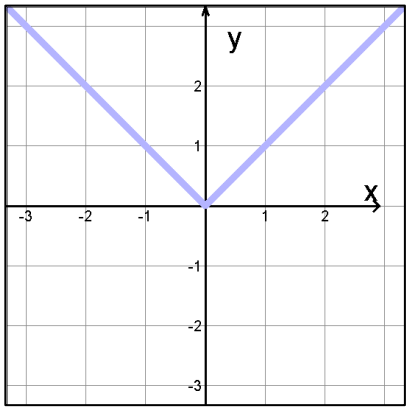
$f(x)$

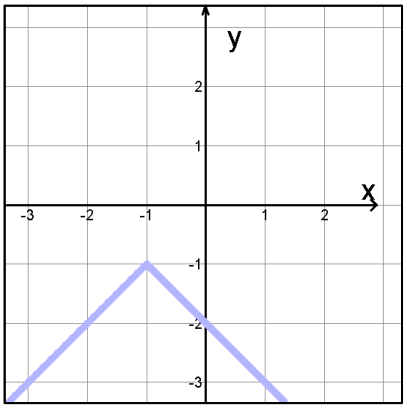




c)

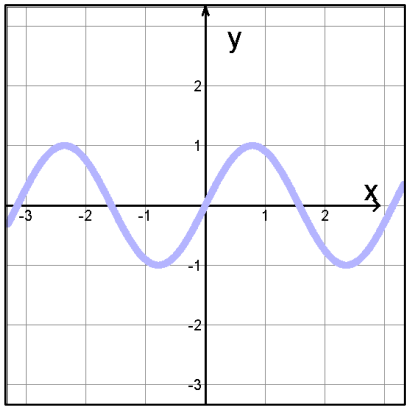
$f(x)$

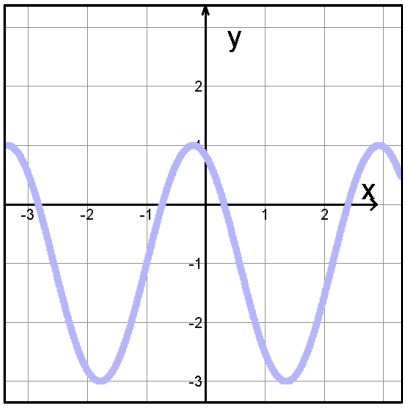




d)

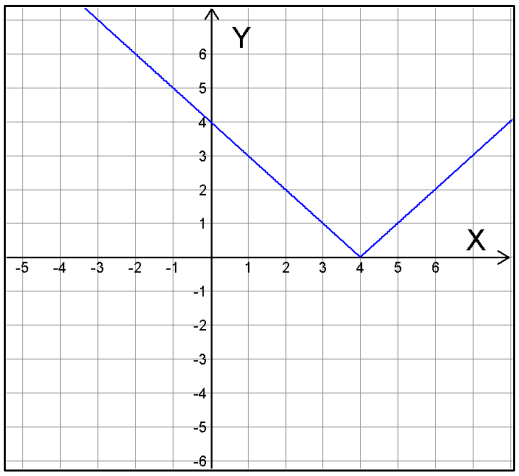
$f(x)$



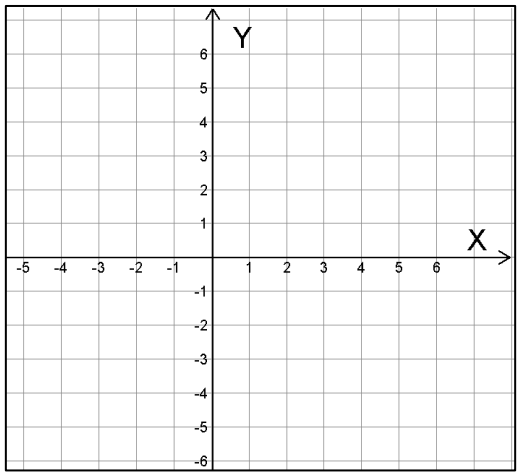


2. Till vänster ritas grafen till funktionen $f(x)$.
Rita i det tomma koordinatsystemet till höger grafen till den beskrivna $g(x)$

a)

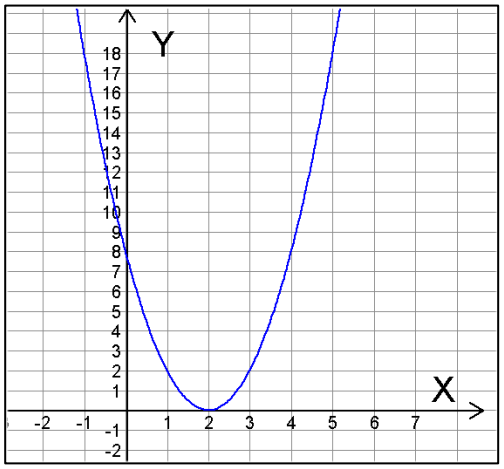


$f(x)$

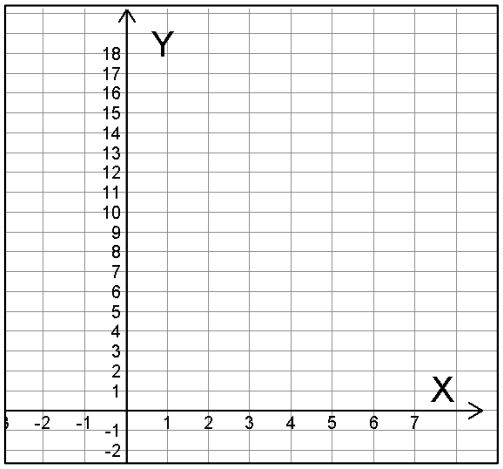


$g(x) = f(x) - 2$

b)

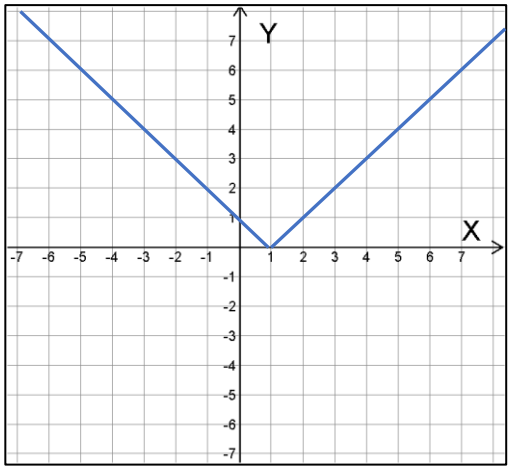


$f(x)$

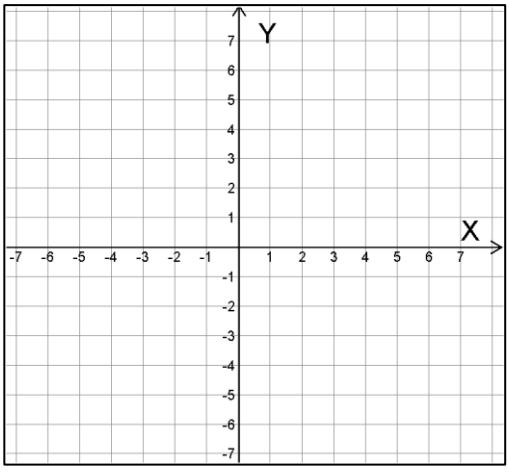


$g(x) = f(x)/2$

c)



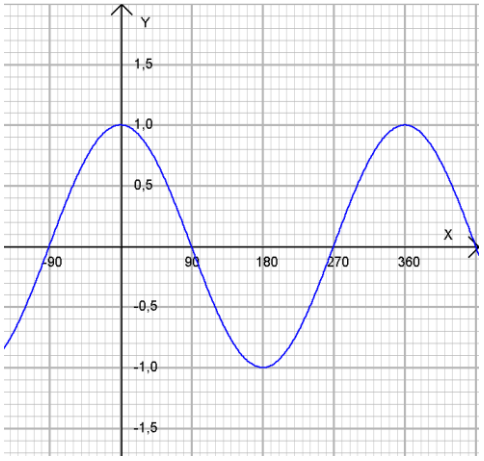
$f(x)$



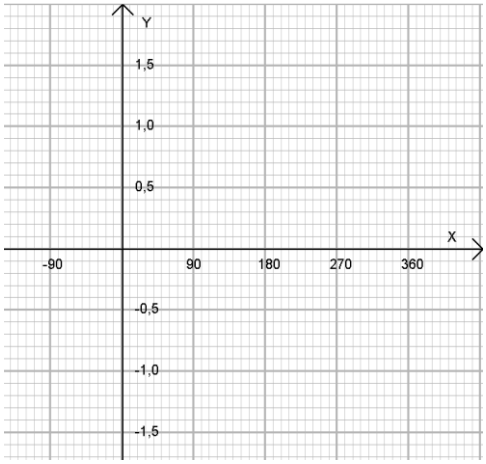
$g(x) = -f(x-2)$

3. Till vänster ritas en trigonometrisk ”grundfunktion”.
Använd den för att skissa grafen till funktionen i det högra koordinatsystemet

a)

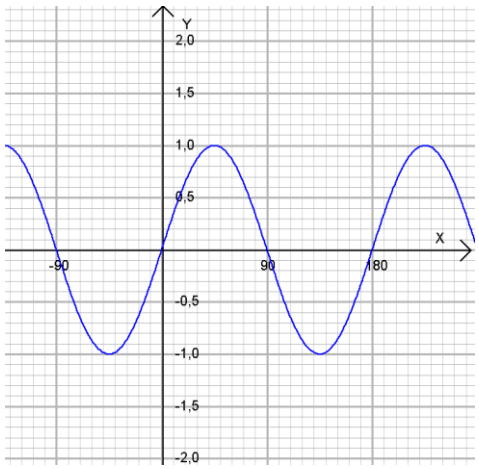


$\cos(x)$

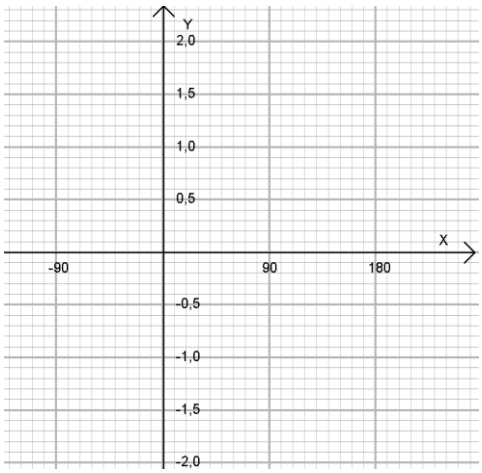


$1{,}5\cos(x + 60°)$

b)

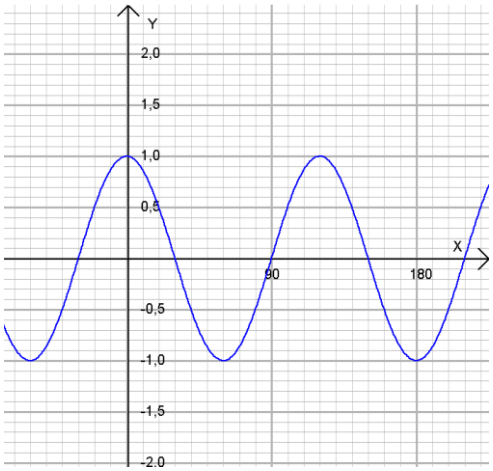


$sin(2x)$

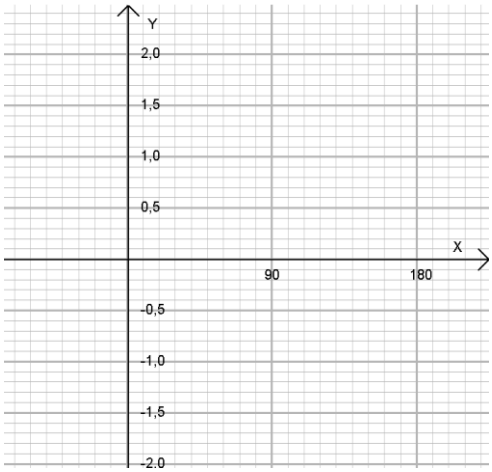


$\sin\big(2(x - 30°)\big) + 0{,}5$

c)



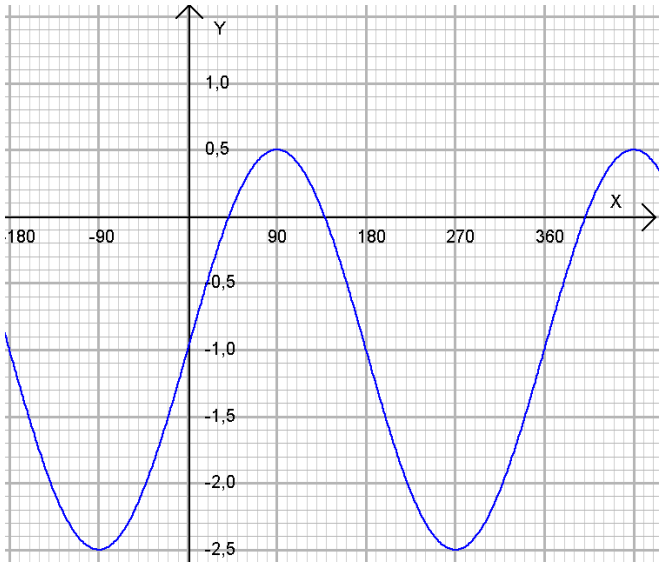
$cos(3x)$



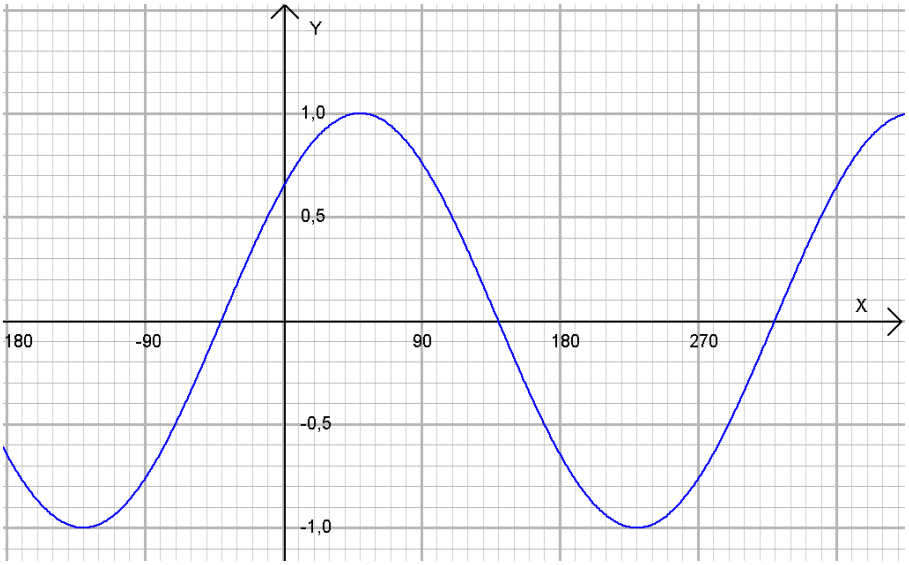
$1{,}5\,cos\big(3(x + 30°)\big) - 0{,}5$

4. Ta fram ett möjligt funktionsuttryck för följande trigonometriska funktioner.

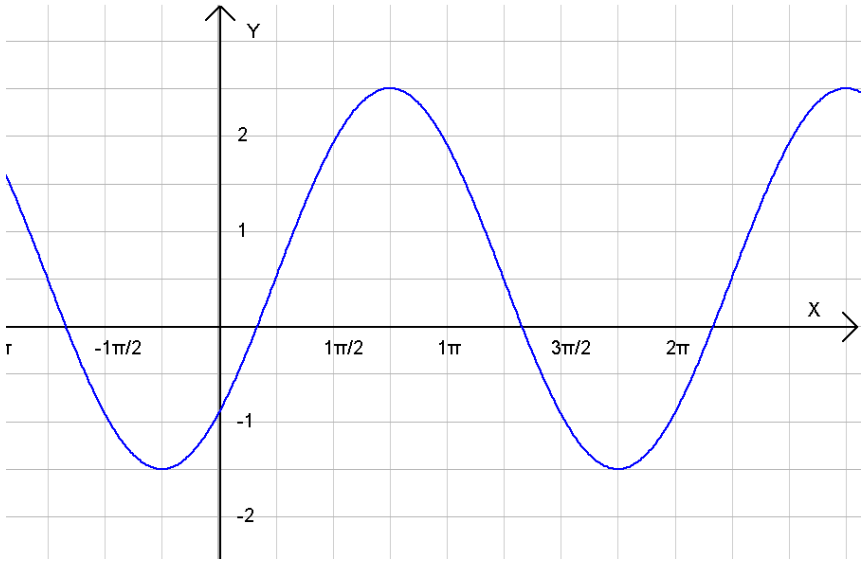
a)



b)

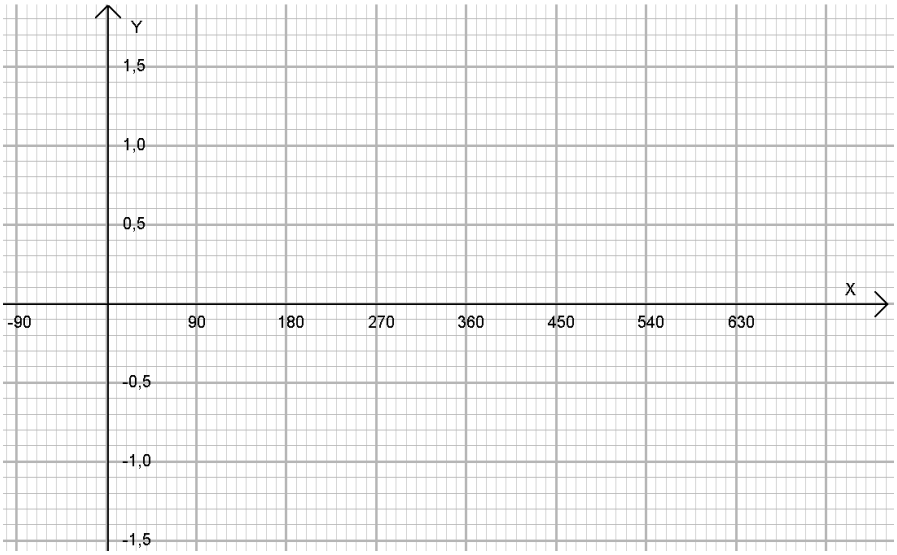


c)



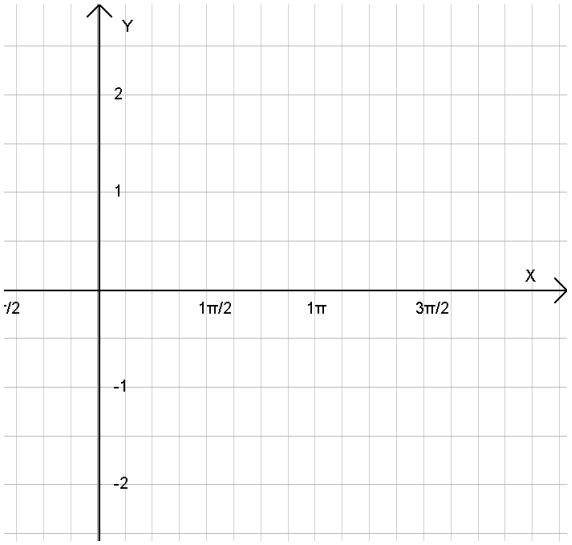
5. Skissa i koordinatsystemet funktionen vars funktionsuttryck står nedanför koordinatsystemet

a)



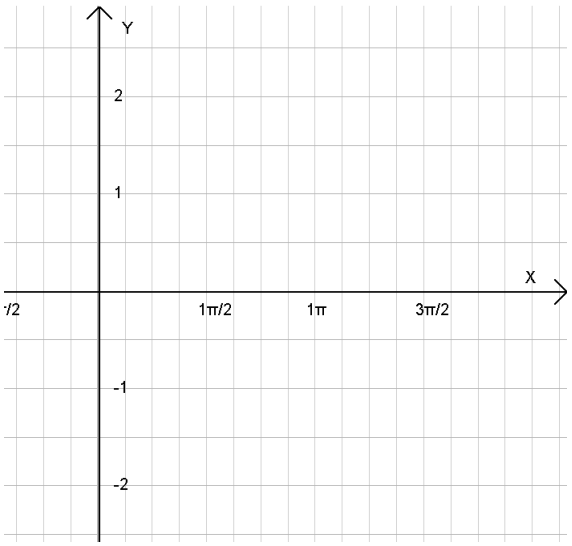
$$f(x) = 1{,}5\sin\big(0{,}6(x + 50°)\big)$$

b)



$$g(x) = 0{,}5\sin\left(2\left(x - \frac{\pi}{8}\right)\right) - 0{,}5$$

c)

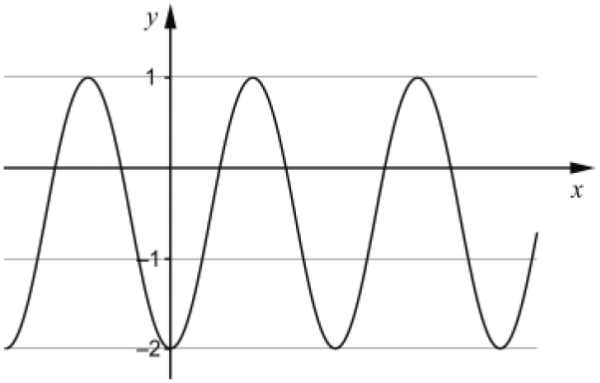


$$g(x) = 2\cos\left(4\left(x + \frac{\pi}{4}\right)\right)$$

6. Lös uppgiften ifrån det gamla nationella provet nedan.
(Miniräknare är tillåtet hjälpmedel)

I Lisas matematikbok finns följande uppgift:

Figuren visar kurvan $y = A\sin^2 x + B$
Bestäm konstanterna A och B.



Lisa löser uppgiften så här:

$A = \frac{1-(-2)}{2} = \frac{3}{2} = 1{,}5$

$B = \frac{1+(-2)}{2} = -\frac{1}{2} = -0{,}5$ Svar: $A = 1{,}5$ och $B = -0{,}5$

Lisas lösning är inte korrekt. Hjälp Lisa att lösa uppgiften korrekt. (0/0/2)

7. Behövs fler ”Träna sig på att hitta/rita transformerade trig. Grafer” finns slumpade sådana på

http://www.thelberg.com/triggraf