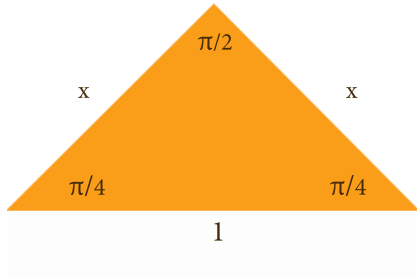
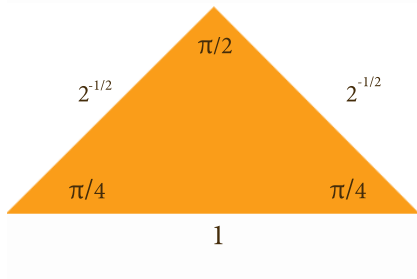


SF1659 Matematik Baskurs
Härledning trigonometriska samband
Linnea Persson - laperss@kth.se

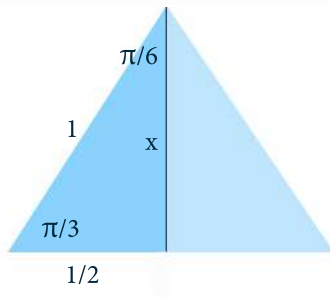
Ställ upp en rätvinklig likbent triangel! Sätt ut alla sidor och vinklar.



Vad är x ? Använd pythagoras sats!
 $x^2 + x^2 = 1^2 \Leftrightarrow 2x^2 = 1 \Leftrightarrow x = \frac{1}{\sqrt{2}}$



Ur detta får då att:
 $\sin(\pi/4) = \frac{1/\sqrt{2}}{1} = \frac{1}{\sqrt{2}}$
 $\cos(\pi/4) = \frac{1/\sqrt{2}}{1} = \frac{1}{\sqrt{2}}$
 $\tan(\pi/4) = \frac{1/\sqrt{2}}{1/\sqrt{2}} = 1$



Starta med en liksidig triangel. Om denna delas på två fås en rätvinklig triangel!

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

$$\sin(\pi/3) = \cos(\pi/6) = \frac{\sqrt{3}/2}{1} = \frac{\sqrt{3}}{2}$$

$$\cos(\pi/3) = \sin(\pi/6) = \frac{1/2}{1} = \frac{1}{2}$$

$$\tan(\pi/3) = \frac{\sqrt{3}/2}{1/2} = \sqrt{3}$$

$$\tan(\pi/6) = \frac{1/2}{\sqrt{3}/2} = \frac{1}{\sqrt{3}}$$

SF1659 Matematik Baskurs
 Härledning trigonometriska samband
 Linnea Persson - laperss@kth.se

Bra formler:

Trigonometrika ettan

$$\cos^2(x) + \sin^2(x) = 1$$

Negativ vinkel:

$$\sin(-x) = -\sin(x)$$

$$\cos(-x) = \cos(x)$$

Addition av konstanter

$$\sin(x + \pi) = -\sin(x)$$

$$\cos(x + \pi) = -\cos(x)$$

$$\sin(\pi - x) = \sin(x)$$

$$\cos(\pi - x) = -\cos(x)$$

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

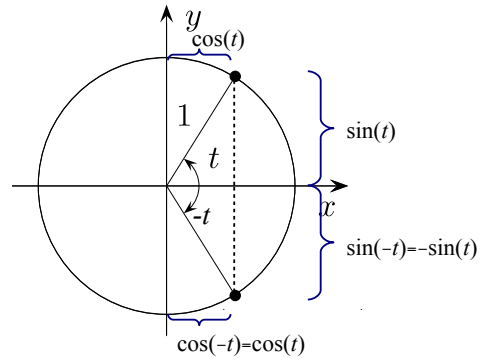
$$\cos\left(x - \frac{\pi}{2}\right) = \sin(x)$$

Addition/subtraktionsformler

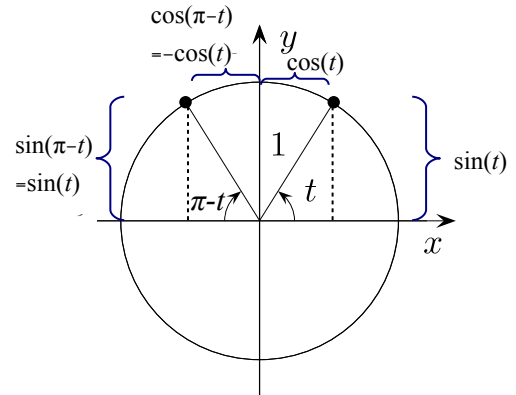
$$\cos(x - y) = \cos(x) \cos(y) + \sin(x) \sin(y)$$

$$\cos(x + y) = \cos(x) \cos(y) - \sin(x) \sin(y)$$

$$\sin(x - y) = \cos(x) \sin(y) - \sin(x) \cos(y)$$



Negativ vinkel



Addition av π