

1233 Lösning:

$$\begin{aligned} VL &= \frac{\tan^2 x}{1 - \cos x} = \\ &= \frac{\sin^2 x}{\cos^2 x (1 - \cos x)} = \\ &= \frac{1 - \cos^2 x}{\cos^2 x (1 - \cos x)} = \\ &= \frac{1 + \cos x}{\cos^2 x} = \frac{1}{\cos x} + \frac{1}{\cos^2 x} = \\ &= HL \end{aligned}$$

1234 Lösning:

$$\begin{aligned} VL &= \frac{1}{\sin x} - \frac{1}{\tan x} = \frac{1}{\sin x} - \frac{\cos x}{\sin x} = \\ &= \frac{1 - \cos x}{\sin x} = \\ &= \frac{(1 - \cos x)(1 + \cos x)}{\sin x (1 + \cos x)} = \\ &= \frac{1 - \cos^2 x}{\sin x (1 + \cos x)} = \\ &= \frac{\sin^2 x}{\sin x (1 + \cos x)} = \\ &= \frac{\sin x}{1 + \cos x} = HL \end{aligned}$$

1235 Ledtråd:

Skriv först om VL så att nämnarna blir lika, $(1 - \sin v)(1 + \sin v)$.

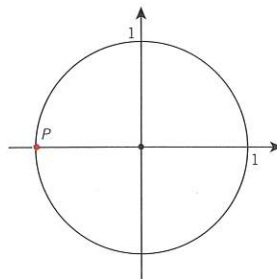
1236 Lösning:

$$\begin{aligned} VL &= \frac{\tan x - \sin x}{\sin^3 x} = \\ &= \frac{\frac{\sin x}{\cos x} - \sin x}{\sin^3 x} = \\ &= \frac{\frac{1}{\cos x} - 1}{\sin^2 x} = \frac{1 - \cos x}{\cos x (1 - \cos^2 x)} = \\ &= \frac{1 - \cos x}{\cos x (1 - \cos^2 x)} = \\ &= \frac{1}{\cos x (1 + \cos x)} = \\ &= \frac{1}{\cos x + \cos^2 x} = HL \end{aligned}$$

1239 a) $A = \sin x$, $B = \sin 25^\circ$

b) $A = \cos y$, $B = \sin 35^\circ$

1240 a)



y-koordinaten för P är $\sin 180^\circ = 0$.

b) Lösning:

$$\begin{aligned} \sin(90^\circ + 90^\circ) &= \\ &= \sin 90^\circ \cdot \cos 90^\circ + \\ &+ \cos 90^\circ \cdot \sin 90^\circ = \\ &= 1 \cdot 0 + 0 \cdot 1 = 0 \end{aligned}$$

1241 a) $1,96 \sin x$

Lösning:
 $\sin x \cdot \cos 12^\circ + \sin x \cdot \cos 12^\circ =$
 $2 \cdot \cos 12^\circ \cdot \sin x \approx 1,96 \sin x$

b) $0,81 \cos x$

1242 a) $2 \sin 50^\circ \cos x \approx 1,53 \cos x$

b) $2 \sin 43^\circ \cos x \approx 1,36 \cos x$

c) $2 \cos 79^\circ \cos x \approx 0,38 \cos x$

1243 a) $2 \sin u \cdot \cos v$

b) $2 \cos u \cdot \sin v$

c) $2 \cos u \cdot \cos v$

d) $-2 \sin u \cdot \sin v$

1244 Lösning:

$$\begin{aligned} VL &= \\ &= \cos(60^\circ + x) + \cos(60^\circ - x) = \\ &= \cos 60^\circ \cdot \cos x - \sin 60^\circ \cdot \sin x + \\ &+ \cos 60^\circ \cdot \cos x + \\ &+ \sin 60^\circ \cdot \sin x = \\ &= 2 \cos 60^\circ \cdot \cos x = 2 \cdot \frac{1}{2} \cdot \cos x = \\ &= \cos x = HL \end{aligned}$$

1245 a) Lösning:

$$\begin{aligned} VL &= \cos(270^\circ - v) = \\ &= \cos 270^\circ \cos v + \sin 270^\circ \\ \sin v &= \\ &= 0 \cdot \cos v + (-1) \cdot \sin v = \\ &= -\sin v = HL \end{aligned}$$

b) Lösning:

$$\begin{aligned} VL &= \sin(360^\circ - x) = \\ &= \sin 360^\circ \cos x - \cos 360^\circ \sin x = \\ &= 0 \cdot \cos x - 1 \cdot \sin x = -\sin x = \\ &= HL \end{aligned}$$

1246 Ledtråd: Sätt $u = 0^\circ$.

1247 $\frac{\sqrt{2}}{2}$ eller $\frac{1}{\sqrt{2}}$

1248 a) $\frac{\sqrt{2}}{2}$ b) $\frac{\sqrt{2}(\sqrt{3} + 1)}{4}$

1249 $\cos(x - x) = 1$

Förklaring:

$$\cos(x - x) = \cos 0^\circ = 1$$

1250 $-\frac{16}{65}$

Ledtråd:

Beräkna $\cos A$ och $\cos B$ med hjälp av trigonometriska ettan.

1251 Lösning:

$$\begin{aligned} \cos(u + v) &= \cos(u - (-v)) = \\ &= \cos u \cdot \cos(-v) + \sin u \cdot \sin(-v) = \\ &= \cos u \cdot \cos v - \sin u \cdot \sin v \end{aligned}$$

1252 —

1253 a) Lösning:

Vi använder sambanden

$$\cos(90^\circ - x) = \sin x$$

$$\sin(90^\circ - x) = \cos x$$

$$\cos((90^\circ - u) - v) =$$

$$= \cos(90^\circ - u) \cdot \cos v +$$

$$+ \sin(90^\circ - u) \cdot \sin v$$

$$VL = \cos(90^\circ - (u + v)) =$$

$$= \sin(u + v)$$

$$HL = \sin u \cdot \cos v + \cos u \cdot \sin v$$

b) Ledtråd:

Byt ut v mot $-v$

1255 a) 0,96 c) 0,75

b) 0,28 d) 3,43

Ledtråd:

$$\tan 2x = \frac{\sin 2x}{\cos 2x}$$

1256 a) $\sin v = \pm \sqrt{0,75} = \pm \sqrt{\frac{3}{4}} = \pm \frac{\sqrt{3}}{2}$