

пример 1

$$1 \cdot \cos x + 1 \cdot \sin x = \sqrt{1^2 + 1^2} [\sin x \cdot \frac{1}{\sqrt{2}} + \cos x \cdot \frac{1}{\sqrt{2}}] = \sqrt{2} [\sin x \cdot \cos \frac{\pi}{4} + \cos x \cdot \sin \frac{\pi}{4}] = \sqrt{2} \sin(x + \frac{\pi}{4})$$

$$\begin{aligned} \cos t &= 1/\sqrt{2} \\ \sin t &= 1/\sqrt{2} \\ t &= \pi/4 \end{aligned}$$

пример 2

$$1 \cdot \sin x - \cos x = \sqrt{1^2 + (-1)^2} [\sin x \cdot \frac{1}{\sqrt{2}} + \cos x \cdot (-\frac{1}{\sqrt{2}})] = \sqrt{2} [\sin x \cdot \cos \frac{7\pi}{4} + \cos x \cdot \sin \frac{7\pi}{4}] = \sqrt{2} \sin(x + \frac{7\pi}{4})$$

$$\begin{aligned} \cos t &= 1/\sqrt{2} \\ \sin t &= -1/\sqrt{2} \\ t &= 7\pi/4 \end{aligned}$$

пример 3

$$1 \cdot \sin x - \sqrt{3} \cos x = \sqrt{1 + (-\sqrt{3})^2} [\sin x \cdot \frac{1}{2} + \cos x \cdot (-\sqrt{3}/2)] = 2 [\sin x \cdot \cos \frac{5\pi}{3} + \cos x \cdot \sin \frac{5\pi}{3}] = 2 \sin(x + \frac{5\pi}{3})$$

$$\begin{aligned} \cos t &= \frac{1}{2} \\ \sin t &= -\sqrt{3}/2 \\ t &= 5\pi/3 \end{aligned}$$

пример 4

$$\sqrt{3} \sin x + 1 \cdot \cos x = \sqrt{(\sqrt{3})^2 + 1^2} [\sin x \cdot \frac{\sqrt{3}}{2} + \cos x \cdot \frac{1}{2}] = 2 [\sin x \cdot \cos \frac{\pi}{6} + \cos x \cdot \sin \frac{\pi}{6}] = 2 \sin(x + \frac{\pi}{6})$$

$$\begin{aligned} \cos t &= \sqrt{3}/2 \\ \sin t &= 1/2 \\ t &= \pi/6 \end{aligned}$$

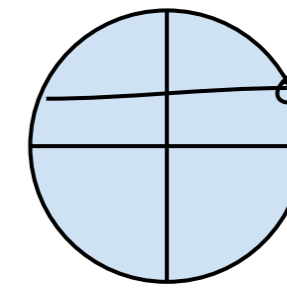
пример 5

$$5 \cdot \sin x + 7 \cdot \cos x = \sqrt{5^2 + 7^2} [\sin x \cdot \frac{5}{\sqrt{74}} + \cos x \cdot \frac{7}{\sqrt{74}}] = \sqrt{74} [\sin x \cdot \cos t + \cos x \cdot \sin t] = \sqrt{74} \sin(x + \arcsin(\frac{7}{\sqrt{74}}))$$

$$\cos t = 5/\sqrt{74}$$

$$\sin t = 7/\sqrt{74}$$

$$t = \arcsin(7/\sqrt{74}) = \arccos(5/\sqrt{74})$$



$$\arcsin(7/\sqrt{74}) = \arccos(5/\sqrt{74})$$

$$\cos t = 5/\sqrt{74}$$

$$\sin t = 7/\sqrt{74}$$

$$\begin{aligned} a \cdot \sin x + b \cdot \cos x &= \sqrt{a^2 + b^2} [a \cdot \sin x / \sqrt{a^2 + b^2} + b \cdot \cos x / \sqrt{a^2 + b^2}] = \\ &= \sqrt{a^2 + b^2} [\cos t \cdot \sin x + \sin t \cdot \cos x] = \sqrt{a^2 + b^2} \sin(x + t) \end{aligned}$$