

Angle Sum Laws

Angle Sum Formulas

$$\sin(A + B) = \sin A \cos B + \cos A \sin B$$

$$\cos(A + B) = \cos A \cos B - \sin A \sin B$$

$$\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$$

1. Write the following shifted trig functions in terms of unshifted functions.

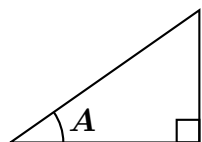
(a) $\sin\left(x + \frac{\pi}{3}\right)$

(b) $\cos\left(x + \frac{\pi}{3}\right)$

(c) $\tan\left(x + \frac{\pi}{3}\right)$

2. Label the edges of reference triangles for A and B in QI with $\sin(A) = \frac{1}{3}$ and $\cos(B) = \frac{2}{3}$. Then compute the requested values.

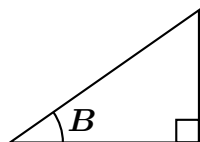
- (a) Edge lengths for reference triangles:



$$\sin A = \frac{1}{3}$$

$$\cos A = \boxed{}$$

$$\tan A = \boxed{}$$



$$\sin B = \boxed{}$$

$$\cos B = \frac{2}{3}$$

$$\tan B = \boxed{}$$

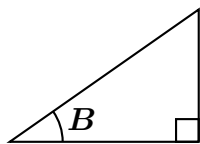
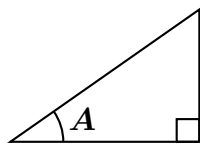
(b) $\sin(A + B) =$

(c) $\cos(A + B) =$

(d) $\tan(A + B) =$

3. Label the edges of reference triangles for A and B in QIII with $\tan(A) = \frac{1}{3}$ and $\tan(B) = \frac{2}{3}$. Then compute the requested values.

(a) Edge lengths for reference triangles:



$$\sin A = \boxed{}$$

$$\sin B = \boxed{}$$

$$\cos A = \boxed{}$$

$$\cos B = \boxed{}$$

$$\tan A = \frac{1}{3}$$

$$\tan B = \frac{2}{3}$$

(b) $\sin(A + B) =$

(c) $\cos(A + B) =$

(d) $\tan(A + B) =$

Challenge. The sum $3 \sin x + 4 \cos x$ can be written as $R \sin(x + \delta)$. What are R and δ ?