1 Problems

Exercise 1. Compute $\sin(\frac{25\pi}{6})$.
Exercise 2. Compute $\cos(\frac{21\pi}{4})$.
Exercise 3. Compute $\cos(\frac{25\pi}{4})$..
Exercise 4. Let $0 < x < \frac{\pi}{2}$ and $\sin(x) = \frac{5}{13}$. Find $\tan(x)$.
Exercise 5. Let $0 < x < \frac{\pi}{2}$ and $\sin(x) = \frac{5}{13}$. Find $\cot(x)$.

2 Answer key

Exercise 1. $\frac{1}{2}$.

Exercise 2. $-\frac{\sqrt{2}}{2}$.

Exercise 3. $\frac{\sqrt{2}}{2}$.

Exercise 4. $\frac{5}{12}$.

Exercise 5. $\frac{12}{5}$.

3 Solutions

Exercise 1. $\frac{25\pi}{6} = \frac{24\pi}{6} + \frac{\pi}{6}$ so $\sin(\frac{25\pi}{6}) = \sin(4\pi + \frac{\pi}{6}) = \sin(\frac{\pi}{6}) = \frac{1}{2}$.

Exercise 2. $\frac{21\pi}{4} = \frac{20\pi}{4} + \frac{\pi}{4}$ so $\cos(\frac{21\pi}{4}) = \cos(5\pi + \frac{\pi}{4}) = -\cos(\frac{\pi}{4}) = -\frac{\sqrt{2}}{2}$.

Exercise 3. $\frac{25\pi}{4} = \frac{24\pi}{4} + \frac{\pi}{4}$ so $\cos(\frac{25\pi}{4}) = \cos(6\pi + \frac{\pi}{4}) = \cos(\frac{\pi}{4}) = \frac{\sqrt{2}}{2}$.

Exercise 4. By Pythagoras, the missing side of the right triangle in the first quadrant has length 12, with sign positive since we are in the first quadrant. So $\tan(x) = \frac{opposite}{adjacent} = \frac{5}{12}$.

Exercise 5. $\cot(x)$ is $1/\tan(x)$ and exercise 4 computes $\tan(x)$ as $\frac{5}{12}$, so $\cot(x) = \frac{12}{5}$.