Pre-Calculus Notes
Tangent and Cotangent

RECALL...

\[ y = \sin x \]

\[ y = \cos x \]

Well... \( \tan x = \frac{\sin x}{\cos x} \) ... REMEMBER?

Let's graph \( y = \tan x \) over the interval \([-\pi, 2\pi]\).

Now let's look at \( y = \cot x \) over the interval \([-\pi, 2\pi]\).

REMEMBER... \( \cot x = \frac{1}{\tan x} \) OR \( \cot x = \frac{\cos x}{\sin x} \).

**TANGENT GENERALIZATIONS:**
- Amplitude:
- Domain:
- Range:
- Zeroes:
- Asymptotes:
- Even or Odd?

**COTANGENT GENERALIZATIONS:**
- Amplitude:
- Domain:
- Range:
- Zeroes:
- Asymptotes:
- Even or Odd?
Example 1: Graph each function over one period, showing vertical asymptotes.

a. \( y = \tan x + 2 \)

b. \( y = \cot \left( x - \frac{\pi}{4} \right) \)

c. \( y = \frac{1}{2} \cot x \)

d. \( y = \tan (2x) \)

e. \( y = -3 \cot \left( \frac{1}{2} x \right) + 1 \)

f. \( y = -2 \tan \left( x + \frac{\pi}{4} \right) - 2 \)

Example 2: Write the equation of each function.

a. 

b. 