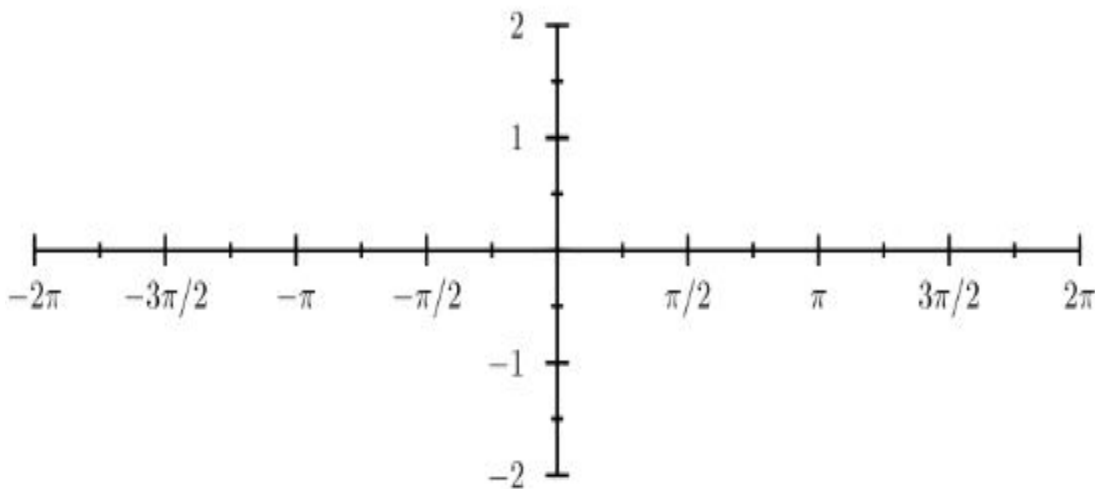**2.3.3** What about tan(x)?

Graphs of Tangent and Inverse Tangent

#147

a. Graph $f(x) = \tan(x)$ using your table from problem #56

b. Using the fact that $\tan(x) = \frac{\sin(x)}{\cos(x)}$, what happens to the function $f(x) = \tan(x)$ when $\cos(x) = 0$?

c. What happens to $f(x) = \tan(x)$ when $\sin(x) = 0$?

Locate all of the x-values over the interval $-2\pi \le x \le 2\pi$ where this occurs and sketch the result on the resource page.

Locate all of the x-values over the interval $-2\pi \le x \le 2\pi$ where this occurs and sketch the result on the resource page.

#148 PROPERTIES OF $f(x) = \tan(x)$

a. What is the domain of $f(x) = \tan(x)$? Which function affects the domain, sine or cosine?	b.What is the range of $f(x) = \tan(x)$? Is this the same or different than the range for sine and cosine? Why?
c. What are the x-intercepts of the function? Which function helps determine these intercepts, sine or cosine?	d. Explain why $f(x) = \tan(x)$ has asymptotes. Write the equations of the asymptotes.
e. What is the period of $f(x) = \tan(x)$? Is this the same or different than the period for sine and cosine? Why?	f. Is $f(x) = \tan(x)$ even, odd, or neither? Use multiple representations to justify your answer.