Section 5.4
Solutions and Hints

by Brent M. Dingle

for the book:

Precalculus, Mathematics for Calculus 4th Edition
by James Stewart, Lothar Redlin and Saleem Watson.

This entire section is just manipulating stuff into the nice form of:

a * function(k * (x – b))

Notice the book leaves off the b assuming you will realize it to be the phase shift as in the previous section (see example 4b in this section)

Also note tangent and cotangent are the only 2 (of the 6) trig functions whose period is π/k. All the others are 2π / k. Thus:

$\tan(x + \pi) = \tan(x)$ $\quad\quad$ $\cot(x + \pi) = \cot(x)$

$\csc(x + 2\pi) = \csc(x)$ $\quad\quad$ $\sec(x + 2\pi) = \sec x$

This may come in useful for solving problems in later classes.

36. Find the period and graph: $y = \frac{1}{2}\tan(\pi x - \pi)$

Be aware that while it appears k always = the stuff in front of the x, there is a little step you must do to get things into the correct form:

We want: $y = a\tan(k * (x – b))$

We have: $y = \frac{1}{2}\tan(\pi x - \pi)$,

So pull out a π and get:

$y = \frac{1}{2}\tan(\pi(x – 1))$

Thus $k = \pi$ and the period of tangent = π / k, thus the period = π / π = **1**

All of these problems work in a similar fashion. PRACTICE DOING THEM !