HW 4.3.3 Horizontal Compression/Stretch of y=tan(x)

Find the period of each function.

1. $f(x)=2\tan(4x)$

2. $g(x)=3\tan\left(\frac{2}{3}x\right)$

3. $f(x)=2\tan\left(\frac{\pi}{2}x\right)$

4. $h(x)=4\tan\left(\frac{4\pi}{3}x\right)$

Find the vertical asymptotes of each function.

5. $j(x)=\tan\left(\frac{\pi}{2}x\right)$.

6. $p(t)=2\tan\left(t-\frac{\pi}{2}\right)$.

7. $k(x)=3\tan\left(\frac{3\pi}{2}x\right)$.

Find the zeroes of each function.

8. $f(x)=\tan(3x)$.

9. $g(t)=2\tan(4\pi t)$.

10. $f(x)=\tan\left(\frac{\pi}{2}x\right)$.

11. Given $y=a\tan(bx)$ describe the relationship between b and the period of the function? If b increases how does the graph change?

Selected Answers:

1. Period $= \frac{\pi}{4}$

3. Period = 2

5. Vertical Asymptotes: $x = 1 + 2n,$ where n is any integer

7. Vertical Asymptotes: $x = \frac{1}{3} + \frac{2}{3}n,$ where n is any integer

9. Zeros: $x = \frac{1}{4}n$ where n is any integer

11. As b increases, the period decreases and the graph is compressed horizontally. As b decreases, the period increases and the graph is stretched horizontally.