hw 12

1. term 0: 0
   1: $x+x^2$
   2: 0
   $\sin(x+x^2) = 0$
   $(2x+1)(\cos(x+x^2)) = 1$
   $-2(2x+1)\sin(x+x^2) = 0$

2. term 0: 0
   1: $x+x^2$
   2: 0
   3: $-\frac{1}{3!}(x+x^2)^3$
   4: 0

3. $\arctan(0)=0$, term 0 = 0
   $\frac{1}{1+0^2} = 1$, term 1 = x
   $(1+(0)^2)(1+\dots)=0$, term 2 = 0
   $2(1+$, term 3 = $-x^3/3$
   $= x - x^3/3 + x^5/5 - x^7/7 \dots$

4. I have no idea.

5. ~~Ans~~
   $\arctan\frac{1}{2} + \arctan\frac{1}{3} = \arctan\left((5/6)/(1-\frac{1}{6})\right) = \arctan(1)$
   $\tan(\pi/4)=1$ so $\arctan(1)=\pi/4$