

**Topics of discussion:**

Recurring Themes/Symbols

- Circles vs square. Why is the circle so intriguing? To philosophy, science?
- What are some examples of when we see the spiral in everyday life?  
-go board (no two similar paths, as game progresses possibilities become smaller and smaller),  
cream in coffee, shell on beach, liquid from computer under microscope, Milky Way
- Why do we see so many bugs? What do they represent?
- Why does Max dream about his brain? (poking at it)

Stereotypes

- How does Pi show the stereotypes of a mathematician?  
-stare into the sun (circular object causing crazyness), addicted to pills/shots, suffering from intense migraine headaches, recluse/paranoid of people, impulsive (shaves head), obsession (needs to find pattern in everything), can do quick calculations in head
- How are women portrayed?  
-Marcy: greedy, corrupt, needy (can't produce numbers herself)  
-neighbor: seductive (hear orgasms whenever he has attack) empathetic, caring, emotional, no mathematical purpose

Art Direction

- Music: How does the score affect your perception of Max? How does it shape the movie's tone?
- Opening Credits: How do the opening credits set up the movie for the viewer?
- Cinematography: Why is the film shot in black and white?

Mathematical Allusions/Actions

- Significance of "personal notes"
- Who are real life mathematicians Max mentions?  
-Pythagorus: universe is made of numbers, golden ratio  
-DaVinci: balance of golden rectangle with curve, generate mythical spiral

**Reflection question:**

- Discuss how Aronofsky's artistic choices (music, cinematography, black and white film) reflect Max's psychological emotional state?

**Bibliography of sources:**

"PI." *PI*. Math.com, n.d. Web. 30 Oct. 2013. <<http://www.math.com/tables/constants/pi.htm>>.

Gandy, Matthew. "Above the treetops: nature, history and the limits to philosophical naturalism." *Geoforum* 39.2 (2008): 561-569.

Konik, Adrian. "Aronofsky's subversion of mainstream cinema through the neo noir" *Pi*"(1998)." *South African Journal of Art History* 18 (2003): 18.

Wallis, Frieder. "Analysis of "Pi" 1997, Written and Directed by Darren Aronofsky." *Darren Aronofsky-(Aronofsky.Net)*. N.p., 24 Apr. 2001. Web. 30 Oct. 2013.  
<<http://aronofsky.tripod.com/piexclusive1.html>>.

### **Mathematical references:**

Pi= 3.14159265...

- is the number you get when you divide the distance around a circle (circumference) by the distance through the middle (diameter)
- the distance around every circle is about 3x across it
- an irrational number
- when you divide circumference by diameter, the answer comes out in decimals that go on forever without any pattern
- is an infinite number

### Fibonacci Sequence

- 13th century Italian mathematician
- numbers in following integer sequence: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144...
- the first two numbers in the Fibonacci sequence are 0 and 1, and each subsequent number is the sum of the previous two
- 144 divided into 233=approaches theta (greek symbol for golden ratio and golden spiral)