

Applied Magnetism, Midterm Spring 2009. Victim: _____

1. The Kerguelen Islands are at 69° East Longitude, 49° South latitude. Assuming the geocentric axial dipole hypothesis, what is the expected Declination and Inclination for the Kerguelen Islands? Explain (briefly) your reasoning and show your work.

Dec expected =

Inc expected =

2. If a stably magnetized Paleocene seamount at 25° North latitude has magnetic inclination of 60° , calculate and explain its likely tectonic trajectory.

3. Sketch an accurate (& neat) apparent polar wander path for a continent that:

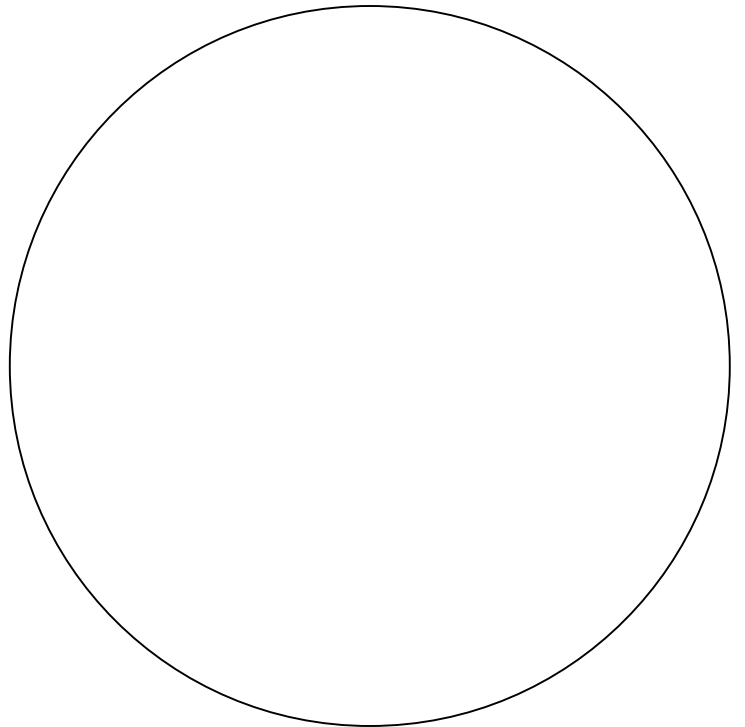
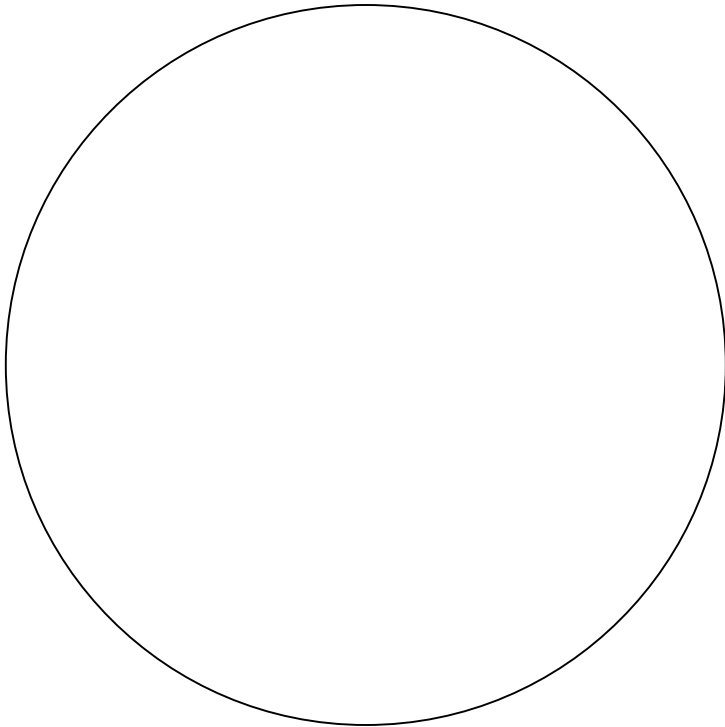
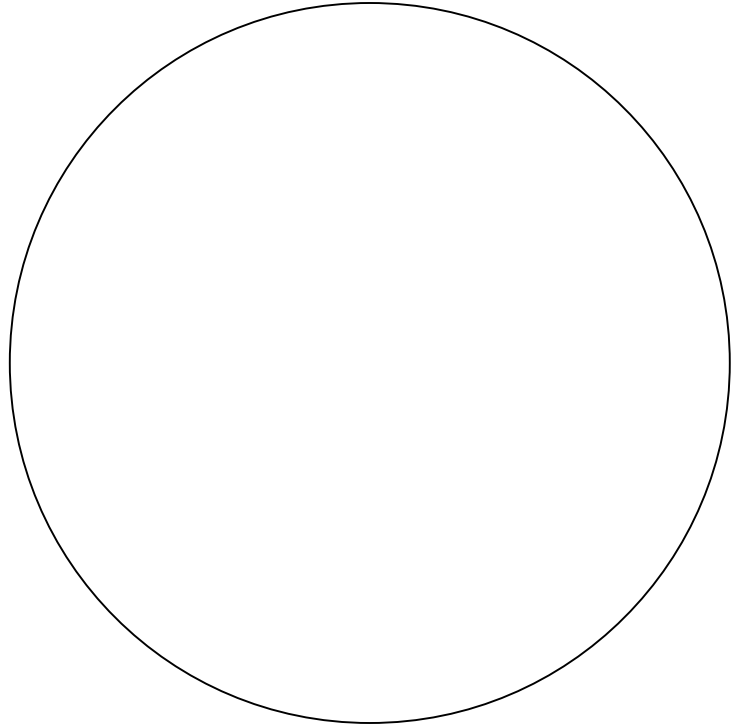
a. was at the north pole at 550 mybp

b. was at 45° North at 300 at mybp

c. was on the equator 150 at mybp

d. rotated 90° clockwise around a nearby vertical axis between 150 mybp and now – show the present pole position

Label your diagram carefully and neatly!



4. Consider the vector end-point diagram at the right (x is north, y is east, z is +down).

a. What are the declination & inclination of the NRM (natural remanent magnetization), characteristic & secondary magnetizations? You can scale accurately enough off the figure without resorting to direct calculations. Label each of these on the figure.

NRM Dec =

NRM Inc =

Characteristic Dec =

Characteristic Inc =

Secondary Dec =

Secondary Inc =

b. If the thermal demagnetization steps start at 100°C and progress by steps of 50°C, what mineral most likely carries the highest temperature component? Why?

c. If someone told you the high temperature components of this study passed the fold test but that the lower temperature components failed, what would that mean in terms of timing and magnetic stability?

