Circles and Other Shapes

1. Is it possible to find a circle that would contain (the points lie on the circle) any three non-collinear points? Show how you know your answer is correct.

2. Is it possible to circumscribe any given quadrilateral? If so, create an argument to support this conjecture. If not, identify all those that can be circumscribed. Explain why these you have identified can be circumscribed.

3. Given any two intersecting chords in a circle (see picture below). Show that the product of the lengths of the pieces of one chord is equal to the product of the lengths of the pieces of the second chord.