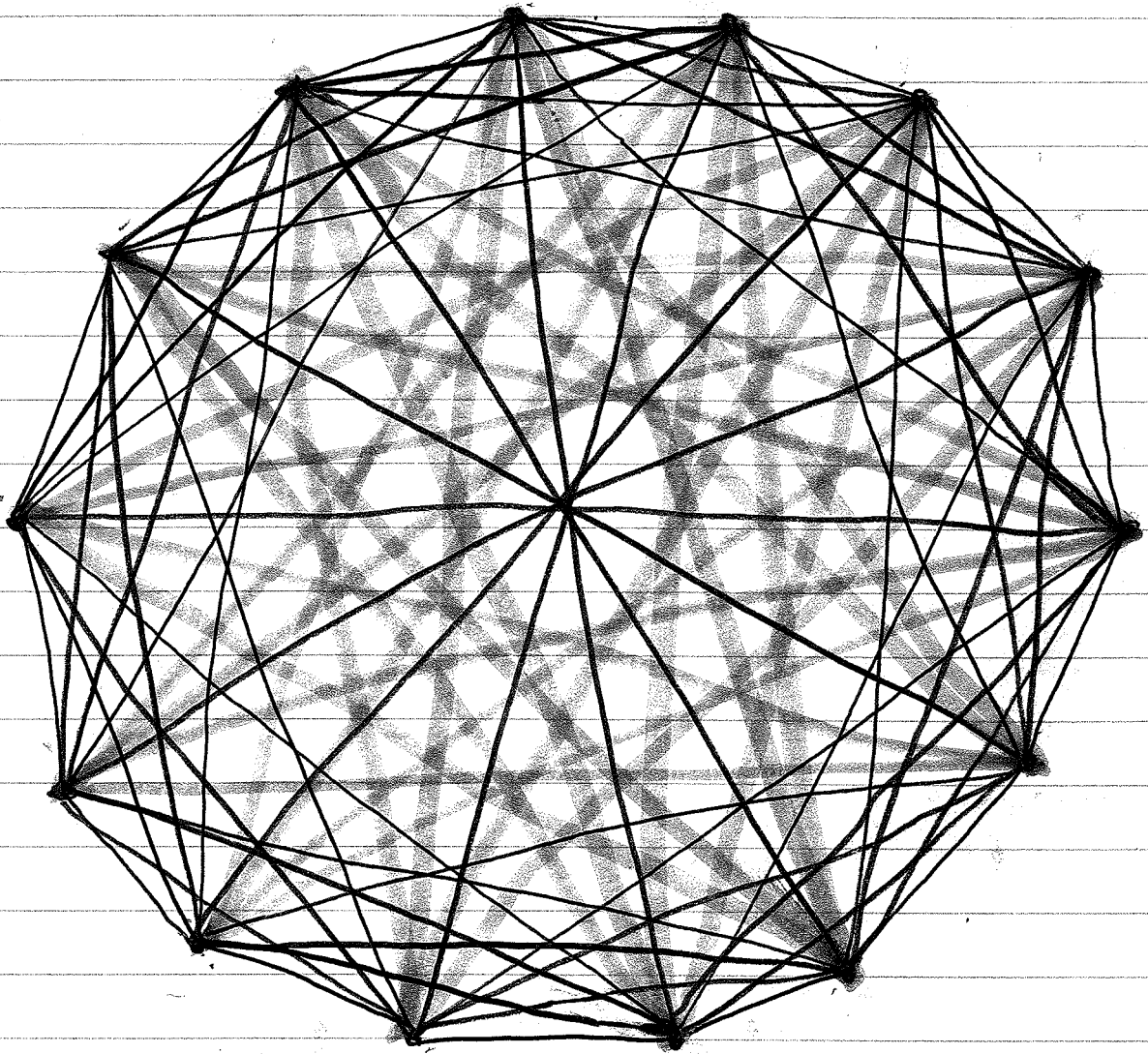


Adam Wright

EC #2

3 Colors on K_{14} w/ No Monochromatic Triangle



- Green Connects vertices 5 & 6 spaces away
 V_i to V_{i+5} & V_i to V_{i+6}
- Blue Connects vertices 4 & 1 space away
 V_i to V_{i+4} & V_i to V_{i+1}
- Pencil Connects vertices 2, 3, & 7 spaces away

EC#2

Note: here V_i & V_{i+14} are the same, since there are 14 vertices

There is no blue triangle: because blue connects V_i to V_{i+1} ,
& V_i to V_{i+4} , so 2 consecutive blue lines connect V_i to V_{i+1} to V_{i+2}
or V_i to V_{i+1} to V_{i+5} or V_i to V_{i+4} to V_{i+5} , or V_i to V_{i+4} to V_{i+8} , so
to form a blue triangle, V_i must be connected to V_{i+2} , V_{i+5} or V_{i+8}
by a blue line, which is impossible, because pencil connects
all vertices 2 spaces away (V_i to V_{i+2}), & green connects all vertices
5 & 6 spaces away (V_i to V_{i+5} & V_i to V_{i+6} (V_i & V_{i+8} are 6 spaces away,
must coincide V_i to be the same as V_{i+14})).

There is no green triangle: because green connects vertices
that are 5 & 6 spaces away V_i to V_{i+5} & V_i to V_{i+6} , so 2 consecutive
green lines can go from V_i to V_{i+5} to V_{i+10} , or from V_i to V_{i+5} to
 V_{i+11} , or V_i to V_{i+6} to V_{i+12} , or V_i to V_{i+6} to V_{i+11} . So to form a
green triangle, green line must connect V_i to V_{i+10} , or V_i to V_{i+11} or
 V_i to V_{i+12} , which is impossible, because pencil connects vertices
2 & 3 spaces away (V_i to V_{i+2} is like V_{i+14} to V_{i+12} ^(2 spaces away) & V_i to V_{i+3} is like
 V_{i+14} to V_{i+11} (3 spaces away)) & blue connects all vertices 4 spaces
away (V_i to V_{i+4} is like V_{i+14} to V_{i+10} (4 spaces)).

There is no pencil triangle: because pencil connects vertices that
are 2, 3, & 7 spaces away, so it connects V_i to V_{i+2} , V_{i+3} , & V_{i+7} , so
2 cons. pencil lines connect V_i to V_{i+2} to V_{i+4} , V_i to V_{i+2} to V_{i+5} , V_i to V_{i+2} to V_{i+9} ,
 V_i to V_{i+3} to V_{i+5} , V_i to V_{i+3} to V_{i+6} , V_i to V_{i+3} to V_{i+10} , V_i to V_{i+7} to V_{i+9} , V_i to
 V_{i+7} to V_{i+10} , or V_i to V_{i+7} to V_{i+14} (this is just a line, because $V_i = V_{i+14}$). So
a pencil triangle must connect V_i to V_{i+4} , V_{i+5} , V_{i+6} , V_{i+9} , or V_{i+10} ,
which is impossible because blue connects all vertices 4 spaces away (V_i to V_{i+4} &
 V_i to V_{i+10} is like V_{i+14} to V_{i+10}) & green connects all vertices 5 & 6 spaces away (V_i
to V_{i+5} (6 spaces) & V_i to V_{i+6} , which is the same as V_i to V_{i+9} , because it's
just like V_{i+14} to V_{i+9} (5 spaces))

So there are no Monochromatic triangles in this example.