ICM Exam – Some Key Topics

1. Probability - combinations/permutations, probability of an event happening
2. Sets - union, intersection, compliments of a set
3. Mutually exclusive events (probability)
4. Leslie Matrices- finding total population, newborn population, population growth (Game Theory unit)
5. Saddle points (Game Theory)
6. Payoff Matrices and best strategy for each player (Game Theory)
7. Linear programming – finding variables and constraints
8. Linear programming – graph, solve, and summarize
9. Linear programming – finding equations in Excel
10. Functions- removable (holes), and nonremovable (vertical asymptotes), horizontal asymptotes (BOSTON acronym), domain and range, x and y intercepts

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11. Composite functions f(g(x))
12. Limits - finding limits from graphs
13. Derivatives f ' (x) - product rule, quotient rule, chain rule
14. Find equation of tangent line to a point (use derivatives!)
15. Applications of derivatives – velocity, acceleration
16. Election Theory- Plurality, Borda, runoff, Condorcet, sequential runoff
17. Estate division- fair share
18. Minimum spanning tree
19. Binary Trees and Post Order Listings
20. Critical paths and Earliest Start Times
21. Graph theory vocab- Euler path/circuit, Hamiltonian path/circuit, planar, complete, connected, bipartite, edges, vertices