152 Quiz 11 Name: _____

1. Use the formula
$$a + ar + ar^2 + ar^3 + ... = \frac{a}{1-r}$$
to compute the infinite sum
$$\frac{1}{3} + \frac{1}{3} \times \frac{1}{2} + \frac{1}{3} \times (\frac{1}{2})^2 + \frac{1}{3} \times (\frac{1}{2})^3 + ...$$

2. Barney and Fred alternately flip a coin. The first one to get "heads' wins. If Barney goes first, what is the probability that he wins?

3. Solve for x: $x = \frac{2}{7} + \frac{5}{7}x^2$

4. Wilma and Betty play a series of games. The probability Wilma wins each game is $\frac{2}{7}$. What is the probability that Wilma will ever be up by one game?

5. Suppose instead the probability Wilma wins is $\frac{4}{9}$. What is the probability Wilma is ever up by one game?