History of Mathematical Ideas
Quiz 3

Name:_____

You have 10 minutes to complete this quiz. If you have a question raise your hand and remain seated. In order to receive full credit your answer must be **complete**, **legible** and **correct**. Show your work, and give adequate explanations.

1. Write the rational number whose continued fraction expansion is $[1; 2, 3]$ in the form $\frac{a}{b}$ for appropriate whole numbers a and b.

$$[1; 2, 3] = 1 + \frac{1}{2+\frac{1}{3}} = 1 + \frac{3}{7} = \frac{10}{7}.$$

2. Verify that Euler's formula, $v - e + f = 2$, holds for the prism having a 20-gon for one of its faces.

The prism having a 20-gon as a face has:

- 40 vertices (20 for the top 20-gon and 20 for the bottom 20-gon),
- 60 edges (20 for the top, 20 for the bottom, and 20 connecting top to bottom), and
- 22 faces (1 top, 1 bottom and 20 between top and bottom).

Hence $v - e + r = 40 - 60 + 22 = 2$.