Q40: Which partial fraction decomposition would you use for the following function: \( \frac{x^2}{(x-1)(x+1)} \)

\[
\frac{A}{x-1} + \frac{B}{x+1}
\]

- \( A \) or \( B \) is not defined
- \( A \) or \( B \) is defined

Q41: Which partial fraction decomposition would you use for the following function: \( \frac{1}{x(x+1)} \)

\[
\frac{A}{x} + \frac{B}{x+1}
\]

- \( A \) or \( B \) is not defined
- \( A \) or \( B \) is defined

Q42: Which partial fraction decomposition would you use for the following function: \( \frac{2x^2+3x+1}{(x-1)(x+1)(x+2)} \)

\[
\frac{A}{x-1} + \frac{B}{x+1} + \frac{C}{x+2}
\]

- \( A \), \( B \), and \( C \) are not defined
- \( A \), \( B \), and \( C \) are defined

Q43: Here is a segment of the Archimedes spiral, which is defined by \( R(\phi) = \phi \).

Which integral calculates the corresponding arc length?

\[
\int_0^\phi \sqrt{1 + \left( \frac{dR}{d\phi} \right)^2} d\phi
\]

Q44: Here is a segment of the Archimedes spiral, which is defined by \( R(\phi) = \phi \).

Which integral calculates the area of the sector?

\[
\int_0^\phi \frac{1}{2} R^2 d\phi
\]