1. Use the Leading Coefficient Test to determine the end behavior of the polynomial function. Then use this end behavior to match the function with its graph.

\[ f(x) = -8x^3 - 3x^2 + 4x - 3 \]

- **A.** rises to the left and falls to the right
- **B.** falls to the left and falls to the right
- **C.** rises to the left and rises to the right
- **D.** falls to the left and rises to the right

2. Find a rational zero of the polynomial function and use it to find all the zeros of the function.

\[ f(x) = x^3 + 8x^2 + 14x + 4 \]

- **A.** \( \{-2, -3 + \sqrt{7}, -3 - \sqrt{7}\} \)
- **B.** \( \{1, -1, -4\} \)
- **C.** \( \{2, -6 + \sqrt{7}, -6 - \sqrt{7}\} \)
- **D.** \( \{-2, -6 + \sqrt{4}, -6 - \sqrt{4}\} \)

3. Graph the rational function.

\[ f(x) = \frac{3x}{x^2 - 4} \]

- **A.**
- **B.**
- **C.**
- **D.**
4. Solve the rational inequality and graph the solution set on a real number line. Express the solution set in interval notation.

\[
\frac{12 - 3x}{7x + 5} \leq 0
\]

○ A. \((-\infty, -\frac{5}{7}) \cup [4, \infty)\)

○ B. \((-\infty, -\frac{5}{7}) \cup [4, \infty)\)

○ C. \([4, \infty)\)

○ D. \((-\infty, -\frac{5}{7}) \cup [4, \infty)\)

5. Graph the function. Use the graph of \(f(x) = e^x\) to obtain the graph of \(g(x) = e^{x+3} + 2\).

○ A.

○ B.

○ C.

○ D.

6. Use properties of logarithms to expand the logarithmic expression as much as possible. Where possible, evaluate logarithmic expressions without using a calculator.

\[
\log_b (yz^5)
\]

○ A. \(\log_b y + \log_b 5z\)

○ B. \(5 \log_b y + 5 \log_b z\)

○ C. \(\log_b 5yz\)

○ D. \(\log_b y + 5 \log_b z\)
7. Solve the exponential equation. Express the solution set in terms of natural logarithms.

\[ 4^{x+4} = 5^{2x+5} \]

- **A.** \[ \ln \left( \frac{5^5}{4^4} - \frac{4}{5^2} \right) \]
- **B.** \{ 7 \ln 5 - 5 \ln 4 \}
- **C.** \[ \frac{5 \ln 5 - 4 \ln 4}{\ln 4 - 2 \ln 5} \]
- **D.** \{ \ln 5 - \ln 4 \}
1. A

2. A

3. C

4. D

5. B

6. D

7. C