Practice Quiz

Find the quotient of each.

1) \[ \frac{3x^3 - 17x^2 + 15x - 25}{x - 5} \]

2) \[ \frac{6x^3 + 10x^2 + x + 8}{2x^2 + 1} \]

Given the polynomial function \( f(x) = -2x^3 - 4x^2 - 5x + 12 \), use synthetic division to evaluate the following.

3) \( f(-1) = \)

4) \( f(3) = \)

5) \( f(-4) = \)

Using the rational zero test, list all possible rational zeros of the following functions.

6) \[ f(x) = 2x^4 - 6x^2 + 5x - 15 \]

6) \[ f(x) = 3x^5 - 6x^4 + 2x^2 - 6x + 12 \]

Determine the end behaviors for each of the following functions.

7) \( f(x) = 3x^4 - 6x^3 + 2x^2 - x + 2 \)

8) \( f(x) = -x^5 + 2x^4 - 3x^3 - 7x + 2 \)

Determine the zeros and multiplicity of each of the following polynomial functions, then sketch the graph for each.

9) \( f(x) = -x(x + 4)^2 (x - 2)(x - 4)^2 \)

10) \( f(x) = 2(x + 6)^3 (x + 1)^5 (x - 3) \)

11) \( f(x) = 3x^2 (x + 3)(x - 2)^2 (x - 6) \)

12) \( f(x) = -(x + 2)^2 (x - 1)^4 (x - 5)^2 \)

Find all roots of the following polynomial equation.

13) \( x^5 - 7x^4 + 10x^3 + 14x^2 - 24x = 0 \)

14) \( 2x^4 - 5x^3 - 44x^2 + 143x - 60 = 0 \)

Sketch the graph of each of the following polynomial functions.

15) \( f(x) = (x + 4)(x - 1)^2 (x - 5) \)

16) \( f(x) = (x + 3)^2 (x - 1)^2 (x - 4) \)