Practice Quiz

Find the quotient of each.

1) $\dfrac{3x^3 - 17x^2 + 15x - 25}{x - 5}$

2) $\dfrac{6x^3 + 10x^2 + x + 8}{2x^2 + 1}$

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 <u>possible</u> 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) $f(x) = (x + 3)^2 (x - 1)^2 (x - 4)$