

HW: Graphing Polynomials

For #1-4, describe the end behavior of the given polynomial function.

1. $f(x) = 2x^4 - 3x + 1$

2. $f(x) = -\frac{7}{8}(x^3 + 5x^2 - 7x + 1)$

3. $f(x) = 5 - \frac{7}{2}x - 3x^2$

4. $f(x) = \frac{6x^5 - 2x^4 + 4x^2 - 5x}{3}$

For #5-8, find all the real zeros of the polynomial function. Then, determine the multiplicity of each zero.

5. $f(x) = x^2 - 25$

6. $f(x) = x^2 - 6x + 9$

7. $f(x) = x^3 - 4x^2 + 4x$

8. $f(x) = x^4 - x^3 - 20x^2$

For #9-12, find a polynomial function with the given zeros, multiplicities, and degree.

9. Zero: -2, multiplicity: 2
Zero: -1, multiplicity: 1
Degree: 3

10. Zero: -4, multiplicity: 2
Zero: 3, multiplicity: 2
Degree: 4

11. Zero: 3, multiplicity: 1
Zero: 2, multiplicity: 3
Degree: 4

12. Zero: 5, multiplicity: 3
Zero: 0, multiplicity: 2
Degree: 5

For #13-16, sketch the graph of the function. Be sure to include zeros and multiplicities on your graph.

13. $f(x) = x^3 - 9x$

14. $f(x) = -x^4 + 9x^2 - 20$

15. $f(x) = x^5 - 4x^3 + 8x^2 - 32$

16. $f(x) = x^3(x - 4)^2$