Classwork Zeros of Polynomial Functions

Please work all problems on a separate sheet of paper.

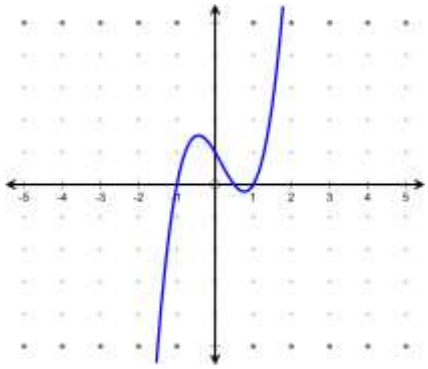
In exercises 1 – 2, use the Rational Zeros Theorem to list all the possible rational zeros of each polynomial function.

1. $f(x) = 3x^3 - 7x^2 + 10$

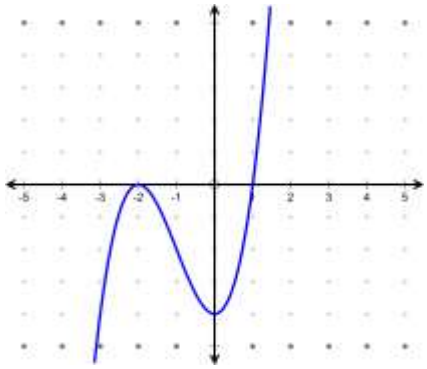
2. $f(x) = -2x^4 + 9x - 6$

In exercises 3 – 17, use the Rational Zeros Theorem, the given graph, and synthetic division to find all zeros of each polynomial function.

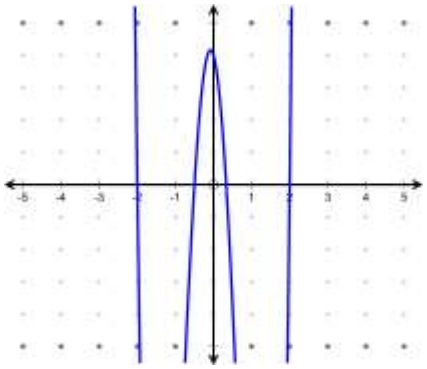
3. $f(x) = 2x^3 - x^2 - 2x + 1$



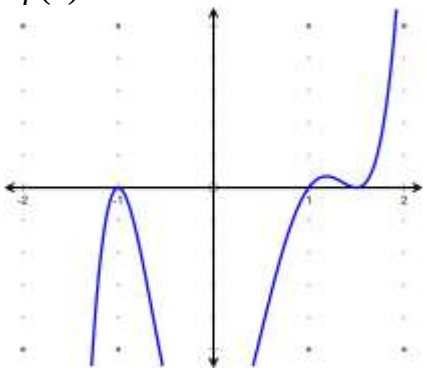
4. $f(x) = x^3 + 3x^2 - 4$



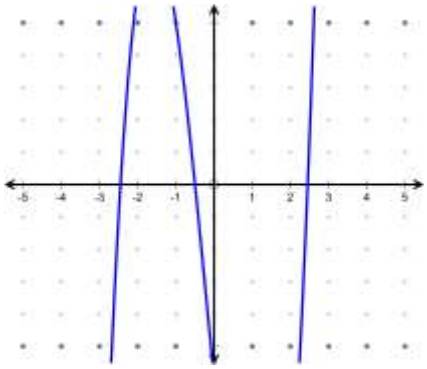
5. $f(x) = 6x^4 + x^3 - 25x^2 - 4x + 4$



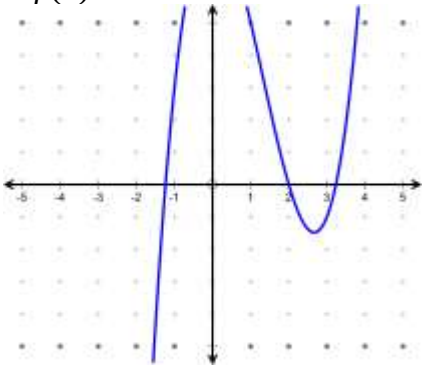
6. $f(x) = 4x^5 - 8x^4 - 7x^3 + 17x^2 + 3x - 9$



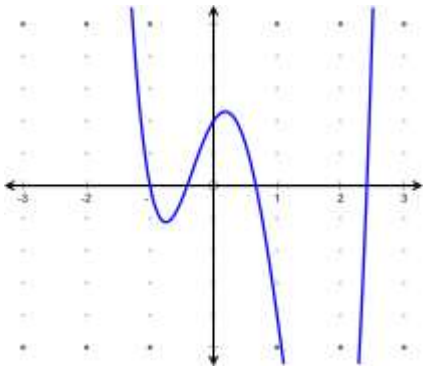
7. $f(x) = 2x^3 + x^2 - 12x - 6$



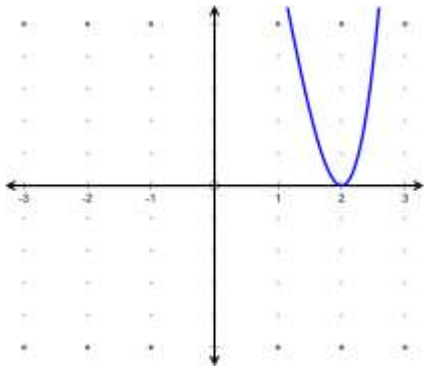
8. $f(x) = x^3 - 4x^2 + 8$



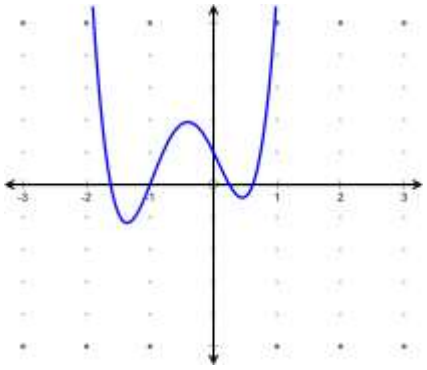
9. $f(x)=3x^4-5x^3-7x^2+3x+2$



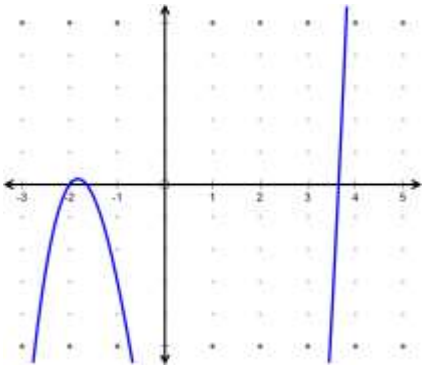
10. $f(x)=x^4-2x^3-8x+16$



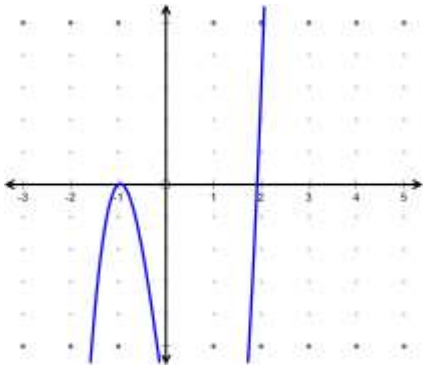
11. $f(x)=4x^4+7x^3-2x^2-4x+1$



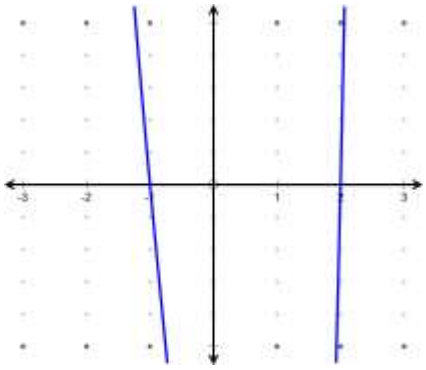
12. $f(x)=x^3-10x-12$



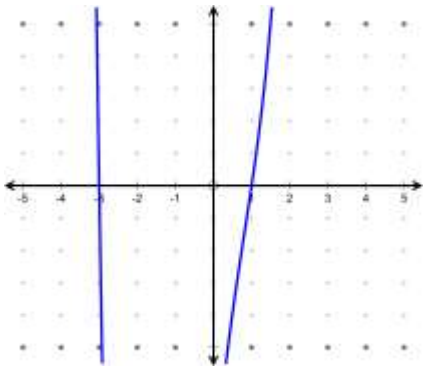
13. $f(x)=4x^3-11x-7$



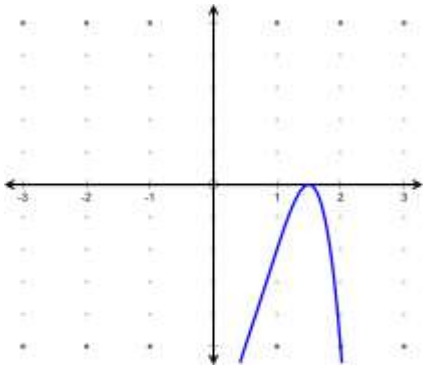
14. $f(x)=2x^4+3x^3+x^2-20x-20$



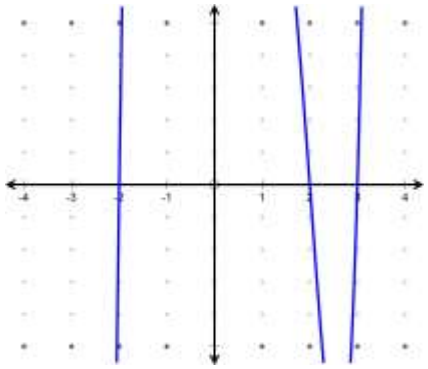
15. $f(x) = x^4 - 4x^2 + 12x - 9$



16. $f(x) = -4x^4 + 12x^3 - 13x^2 + 12x - 9$



17. $f(x) = x^5 - 3x^4 - 3x^3 + 9x^2 - 4x + 12$



In exercise 18, a complex root is given. Find all the remaining roots, and then express the polynomial as a product of linear factors using complex numbers.

18. $x^4 - 2x^3 + 6x^2 - 8x + 8 = 0,\ x = 2i$ is a root

In exercise 19, find a polynomial function of minimal degree with real coefficients with the given set of zeros.

19. $3,\ 2i,\ -2i$