3.4 WS 3

Find all the zeros of the polynomial function and write the polynomial as a product of its leading coefficient and its linear factors.

1. $P(x) = 4x^4 - 4x^3 + 13x^2 - 12x + 3$

2. $P(x) = 2x^4 - x^3 - 2x^2 + 13x - 6$

3. $P(x) = 2x^4 - x^3 - 15x^2 + 23x + 15$

4. $P(x) = 2x^3 - 9x^2 + 18x - 20$

Use the given zero to find the remaining zeros of each polynomial function.

5. $P(x) = x^4 - 8x^3 + 18x^2 - 8x + 17;\ \ i$

6. $P(x) = x^4 - 17x^3 + 112x^2 - 333x + 377;\ \ 5 + 2i$

Find the polynomial function *P*, with real coefficients, that has the indicated zeros and satisfies the given conditions.

7. Zeros: $\frac{3}{4},\ 2 + 7i;$ degree 3

8. Zeros: $i,\ 3 - 5i;$ degree 4

9. Zeros: $-5,\ 3$ (*multiplicity* 2), $2 + i;$ degree 5

10. Zeros: $-5, 2,\ 2 - 3i;$ degree 4