

Hon Pre-Calc

Quiz - Solve Polynomial

Name _____

Show all work!!!

Short Answer

$$f(x) = -6x^7 - 35x^6 - 69x^5 - 20x^4 + 86x^3 + 75x^2 - 11x - 20$$

1. Given: $f(x) = 6x^7 - 35x^6 + 69x^5 - 20x^4 - 86x^3 + 75x^2 + 11x - 20$, and $f(2-i) = 0$

a) Determine the number(s) of positive, negative, and imaginary zeros

Positive	Negative	Imaginary
5	2	0
3	2	2
1	2	4
5	0	2
3	0	4
1	0	6

b) List all possible rational zeros

$$p: \pm 5, \pm 4, \pm 10, \pm 2, \pm 20, \pm 1$$

$$q: \pm 6, \pm 1, \pm 3, \pm 2$$

$$\frac{p}{q} = \pm \frac{5}{6}, \pm 5, \pm \frac{5}{3}, \pm \frac{5}{2}, \pm \frac{5}{3}, \pm 4, \pm \frac{4}{3}, \pm 2, \pm 10, \pm \frac{10}{3}, \pm \frac{1}{3}, \pm 1, \pm 20, \pm \frac{20}{3}, \pm \frac{1}{6}, \pm \frac{1}{2}$$

c) Solve completely

$$\begin{array}{r} 2-i \overline{) 6 \quad -35 \quad 69 \quad -20 \quad -86 \quad 75 \quad 11 \quad -20} \\ \underline{\downarrow} \quad 12 \quad -69 \quad -52+11i \quad 45+5i \quad 55-15i \quad -77i \quad -3+4i \quad 20 \\ 2+i \overline{) 6 \quad -23-6i \quad 17+11i \quad 25+5i \quad -31-15i \quad -2+i \quad 8+4i \quad 0} \\ \underline{\downarrow} \quad 12+6i \quad -22-11i \quad -10-5i \quad 30+15i \quad -2-i \quad -8-4i \\ \frac{1}{2} \overline{) 6 \quad -11 \quad -5 \quad 15 \quad -1 \quad -4 \quad 0} \\ \underline{\downarrow} \quad -5 \quad 7 \quad -1 \quad -7 \quad 4 \\ -1 \overline{) 6 \quad -14 \quad 2 \quad 14 \quad -8} \\ \underline{\downarrow} \quad -6 \quad 20 \quad -22 \quad 8 \\ 1 \overline{) 6 \quad -20 \quad 22 \quad -8 \quad 0} \\ \underline{\downarrow} \quad 6 \quad -14 \quad 8 \quad 0 \end{array}$$

$$6x^2 - 14x + 8$$

$$3x^2 - 7x + 4$$

$$(3x^2 - 3x)(-4x + 4)$$

$$3x(x-1) - 4(x-1)$$

$$(3x-4)(x-1)$$

$$x = \frac{4}{3}, 1 \text{ mult. 2}, -1, \frac{1}{2}, 2 \pm i$$