Solve for all of the zeroes for the following polynomials. You must show the process for finding the zeroes.

26. $x^4 + 3x^3 - x^2 + 27x - 90 = 0$

Factored Form: $(x+5)(x-2)(x^2+9)$

Roots: $-5, 2, \pm 3i$

-5	1	3	−1	27	−90
	↓	−5	10	−45	90
2	1	−2	9	−18	0
	↓	2	0	18	
	1	0	9	0	

$x^2 + 9 = 0$

$x^2 = -9$

$x = \pm 3i$

27. $g(x) = 2x^5 + 5x^4 - 7x^3 - 11x^2 + 13x - 2$

Factored Form: $(x+2)(x-1)^2(2x^2+5x-1)$

Roots: $-2, 1, \frac{-5 \pm \sqrt{33}}{4}$

-2	2	5	−7	−11	13	−2
	↓	−4	−2	18	−14	2
1	2	1	−9	7	−1	0
	↓	2	3	−6	1	
1	2	3	−6	1	0	
	↓	2	5	−1		
	2	5	−1	0		

$$\frac{-5 \pm \sqrt{(5)^2 - 4(2)(-1)}}{2(2)}$$

$$\frac{-5 \pm \sqrt{33}}{4}$$

28. What are all of the possible rational roots for $f(x) = 3x^4 - 7x + 48$?

P: 1, 2, 3, 4, 6, 8, 12, 16, 24, 48

q: 1, 3

11. $\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 8, \pm 12, \pm 16, \pm 24, \pm 48, \pm \frac{1}{3}, \pm \frac{2}{3}, \pm \frac{4}{3}, \pm \frac{8}{3}, \pm \frac{16}{3}$

29. Write a **function** (use proper notation) in factored form, given the following roots: 3i, 5i, 2, -1.

$$f(x) = (x-3i)(x+3i)(x-5i)(x+5i)(x-2)(x+1)$$

Identify the f

30. $y = -4x^4$

Degree

# of ter

Leading

Symme

End beh

31. Sketch the gr

Zeroes:

Intervals

Intervals

32. Write the equa
rises to the left and

Identify the following for each of the polynomials given.

30. $y = -4x^4 - 2x^2 + 7$

Degree of polynomial: 4

Name by the degree of the polynomial: quartic

# of terms: 3

Name by the number of terms: trinomial

Leading coefficient: -4

Maximum number of zeroes: 4

Symmetry of the polynomial: even

End behavior: as $x \to -\infty$, $f(x) \to -\infty$

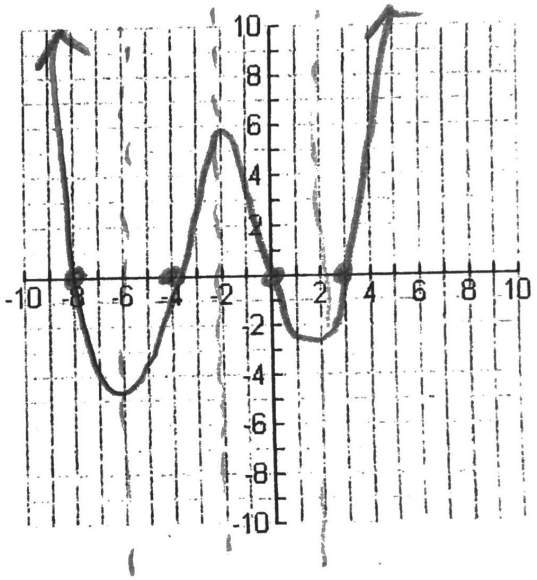
as $x \to \infty$, $f(x) \to -\infty$

31. Sketch the graph of the polynomial function with the following characteristics:

Zeroes: 3, 0, -4, -8

Intervals of increase: $(-6, -2), (1, \infty)$

Intervals of decrease: $(-\infty, -6), (-2, 1)$



32. Write the equation of the function that is a quintic binomial with odd symmetry and whose end behavior rises to the left and falls to the right.

$y = -x^5 + x^3$

$\pm 16,$

$, \pm 8/3, \pm 16/3$