

EXERCISE A

List all possible rational zeros of each function. (list the p's, q's, and p/q's)

1) $f(x) = x^4 - 10$

2) $f(x) = 6x^3 + 6x^2 - 15x - 2$

3) $g(x) = x^5 - x^3 + 4x^2 + 36$

4) $g(x) = 3x^4 - x^3 + 4$

5) $f(x) = 9x^3 + x^2 + x - 1$

6) $h(x) = 4x^3 + 3x^2 - 2x + 6$

Find all of the rational zeros of each function.

7) $p(x) = x^3 - 5x^2 - 22x + 56$

8) $f(x) = x^3 - x^2 - 34x - 56$

9) $k(x) = x^4 - 13x^2 + 36$

10) $h(x) = 2x^3 - 7x^2 - 8x + 28$

EXERCISE B

List all possible rational zeros of each function.

11) $f(x) = x^3 + 6x + 2$

12) $h(x) = x^3 + 8x + 6$

13) $f(x) = 3x^4 + 15$

14) $n(x) = x^5 + 6x^3 - 12x + 18$

15) $p(x) = 3x^3 - 5x^2 - 11x + 3$

16) $h(x) = 9x^6 - 5x^3 + 27$

Find all the zeros of each function.

17) $p(x) = x^3 - 3x - 2$

18) $g(x) = 4x^4 - 4x^3 - 53x^2 + 5x + 60$

19) $f(x) = x^5 - 6x^3 + 8x$

20) $h(x) = 10x^3 - 17x^2 - 7x + 2$

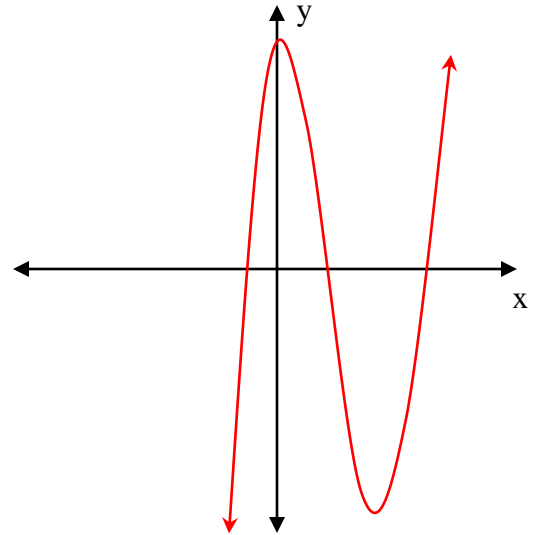
21) $p(x) = x^5 - 2x^4 - 12x^3 - 12x^2 - 13x - 10$

EXERCISE C

22) Find all the zeros for each of the following functions:

$$f(x) = x^3 - 2x^2 + 3 \quad \text{and} \quad g(x) = 2x^3 - 7x^2 + 2x + 3$$

23) Determine which function from #22 (f or g), is shown in the graph to the right. Explain your choice.



ANSWERS:

1) p/q: $\pm 1, 2, 5, 10$

3) p/q: $\pm 1, 2, 3, 4, 6, 9, 12, 18, 36$

5) p/q: $\pm 1, 1/3, 1/9$

7) $-4, 2, 7$

9) $-3, -2, 2, 3$

11) p/q: $\pm 1, 2$

13) p/q: $\pm 1, 3, 5, 15, 1/3, 5/3$

15) p/q: $\pm 1, 3, 1/3$

17) $-1, -1, 2$

19) $-2, 0, 2, \pm 1.4$ ($\pm \sqrt{2}$)

21) $-2, -1, 5, \pm i$

23) $g(x)$; it has 3-real zeros, the graph crosses the x-axis 3 times.