

Rational Zeros

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Given the polynomial function $f(x)$, find the rational zeros, then the other zeros (that is, solve the equation $f(x) = 0$), and factor $f(x)$ into linear factors.

1) $f(x) = x^3 - 12x - 16$ 1) _____

- A) -2, multiplicity 2; 4; $f(x) = (x+2)^2(x-4)$ B) -2, 2, 4; $f(x) = (x+2)(x-2)(x-4)$
C) -2, multiplicity 2; -4; $f(x) = (x+2)^2(x+4)$ D) -4, -2, 2; $f(x) = (x+4)(x+2)(x-2)$

2) $f(x) = x^4 + 6x^3 + 7x^2 - 6x - 8$ 2) _____

- A) -4, -2, 1, multiplicity 2; $f(x) = (x+4)(x+2)(x-1)^2$
B) -1, 1, 2, 4; $f(x) = (x+1)(x-1)(x-2)(x-4)$
C) -4, -2, -1, 1; $f(x) = (x+4)(x+2)(x+1)(x-1)$
D) -2, -1, 1, 4; $f(x) = (x+2)(x+1)(x-1)(x-4)$

3) $f(x) = x^4 + 15x^3 + 49x^2 - 15x - 50$ 3) _____

- A) -5, -1, 1, 10; $f(x) = (x+5)(x+1)(x-1)(x-10)$
B) -10, -5, -1, 1; $f(x) = (x+10)(x+5)(x+1)(x-1)$
C) -10, -5, 1, multiplicity 2; $f(x) = (x+10)(x+5)(x-1)^2$
D) -1, 1, 5, 10; $f(x) = (x+1)(x-1)(x-5)(x-10)$

4) $f(x) = x^3 - 75x - 250$ 4) _____

- A) -10, -5, 5; $f(x) = (x+10)(x+5)(x-5)$
B) -5, multiplicity 2; -10; $f(x) = (x+5)^2(x+10)$
C) -5, multiplicity 2; 10; $f(x) = (x+5)^2(x-10)$
D) -5, 5, 10; $f(x) = (x+5)(x-5)(x-10)$

5) $f(x) = x^3 + 3x^2 + 9x + 27$ 5) _____

- A) -3, $-\sqrt{3}$, multiplicity 2; $f(x) = (x+3)(x+\sqrt{3})^2$
B) -3, $27i$, $9i$; $f(x) = (x+3)(x-27i)(x-9i)$
C) -3, $-3i$, $3i$; $f(x) = (x+3)(x+3i)(x-3i)$
D) $-\sqrt{3}$, multiplicity 2; $3i$; $f(x) = (x+\sqrt{3})^2(x-3i)$

6) $f(x) = x^3 + 5x^2 + 9x + 45$ 6) _____

- A) -5, $-\sqrt{3}$, multiplicity 2; $f(x) = (x+5)(x+\sqrt{3})^2$
B) $-\sqrt{5}$, multiplicity 2; $3i$; $f(x) = (x+\sqrt{5})^2(x-3i)$
C) -5, $-3i$, $3i$; $f(x) = (x+5)(x+3i)(x-3i)$
D) -5, $45i$, $9i$; $f(x) = (x+5)(x-45i)(x-9i)$

Answer Key

Testname: RATIONAL ZEROS

- 1) A
- 2) C
- 3) B
- 4) C
- 5) C
- 6) C