

Math Sheet

Name _____ Score _____ / 12 Teacher _____ Date _____

Descartes Rule of Signs

List the possible numbers of positive and negative real zeros, counting multiplicity. These are possibilities, not the actual zeros.

1. $x^2 + 88$

Positive real zeros: _____

Negative real zeros: _____

2. $x^5 - 33x^4 - 16x^3 + 2x^2 + 98x + 94$

Positive real zeros: _____

Negative real zeros: _____

3. $x^3 + 18x - 25$

Positive real zeros: _____

Negative real zeros: _____

4. $x^3 - 45x^2 + 80x - 12$

Positive real zeros: _____

Negative real zeros: _____

5. $x^2 + 70x + 17$

Positive real zeros: _____

Negative real zeros: _____

6. $x^6 + 41x^5 + 39x^4 + 14x^3 + 83x^2 + 36x - 36$

Positive real zeros: _____

Negative real zeros: _____

7. $x^5 - 57x^4 - 48x^3 - 97x^2 + 39x + 93$

Positive real zeros: _____

Negative real zeros: _____

8. $x^6 + 60x^5 + 51x^4 + 45x^3 + 10x^2 + 50x + 1$

Positive real zeros: _____

Negative real zeros: _____

9. $x^4 + 87x^3 + 78x^2 + 56x + 24$

Positive real zeros: _____

Negative real zeros: _____

10. $x^2 - 57x + 71$

Positive real zeros: _____

Negative real zeros: _____

11. $x^6 - 82$

Positive real zeros: _____

Negative real zeros: _____

12. $x^4 - 58x^3 + 6x^2 - 93x + 94$

Positive real zeros: _____

Negative real zeros: _____

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Descartes Rule of Signs

Answer key

List the possible numbers of positive and negative real zeros, counting multiplicity. These are possibilities, not the actual zeros.

1. $x^2 + 88$

Positive: $V(P(x)) = 0$; possible: 0
Negative: $V(P(-x)) = 0$; possible: 0

2. $x^5 - 33x^4 - 16x^3 + 2x^2 + 98x + 94$

Positive: $V(P(x)) = 2$; possible: 2, 0
Negative: $V(P(-x)) = 3$; possible: 3, 1

3. $x^3 + 18x - 25$

Positive: $V(P(x)) = 1$; possible: 1
Negative: $V(P(-x)) = 0$; possible: 0

4. $x^3 - 45x^2 + 80x - 12$

Positive: $V(P(x)) = 3$; possible: 3, 1
Negative: $V(P(-x)) = 0$; possible: 0

5. $x^2 + 70x + 17$

Positive: $V(P(x)) = 0$; possible: 0
Negative: $V(P(-x)) = 2$; possible: 2, 0

6. $x^6 + 41x^5 + 39x^4 + 14x^3 + 83x^2 + 36x - 36$

Positive: $V(P(x)) = 1$; possible: 1
Negative: $V(P(-x)) = 5$; possible: 5, 3, 1

7. $x^5 - 57x^4 - 48x^3 - 97x^2 + 39x + 93$

Positive: $V(P(x)) = 2$; possible: 2, 0
Negative: $V(P(-x)) = 3$; possible: 3, 1

8. $x^6 + 60x^5 + 51x^4 + 45x^3 + 10x^2 + 50x + 1$

Positive: $V(P(x)) = 0$; possible: 0
Negative: $V(P(-x)) = 6$; possible: 6, 4, 2, 0

9. $x^4 + 87x^3 + 78x^2 + 56x + 24$

Positive: $V(P(x)) = 0$; possible: 0
Negative: $V(P(-x)) = 4$; possible: 4, 2, 0

10. $x^2 - 57x + 71$

Positive: $V(P(x)) = 2$; possible: 2, 0
Negative: $V(P(-x)) = 0$; possible: 0

11. $x^6 - 82$

Positive: $V(P(x)) = 1$; possible: 1
Negative: $V(P(-x)) = 1$; possible: 1

12. $x^4 - 58x^3 + 6x^2 - 93x + 94$

Positive: $V(P(x)) = 4$; possible: 4, 2, 0
Negative: $V(P(-x)) = 0$; possible: 0