

Finding Real Zeros of Polynomial Functions

Date _____ Period _____

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State the possible number of positive and negative zeros for each function.

1) $f(x) = 4x^5 + 6x^4 + 26x^3 + 39x^2 + 40x + 60$

2) $f(x) = 25x^5 - 15x^4 + 95x^3 - 57x^2 - 20x + 12$

State the possible rational zeros for each function.

3) $f(x) = 64x^6 - 1$

4) $f(x) = 2x^6 - 3x^4 - 8x^2 + 12$

Find all zeros.

5) $f(x) = x^3 + x^2 + x + 21$

6) $f(x) = 5x^4 + 4x^3 - x^2$

$$7) f(x) = 2x^5 + 7x^4 + 7x^3 + 2x^2$$

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

$$9) f(x) = 5x^4 - 47x^2 + 18$$

$$10) f(x) = x^3 - 27$$

Finding Real Zeros of Polynomial Functions

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State the possible number of positive and negative zeros for each function.

1) $f(x) = 4x^5 + 6x^4 + 26x^3 + 39x^2 + 40x + 60$

Possible # positive real zeros: 0

Possible # negative real zeros: 5, 3, or 1

2) $f(x) = 25x^5 - 15x^4 + 95x^3 - 57x^2 - 20x + 12$

Possible # positive real zeros: 4, 2, or 0

Possible # negative real zeros: 1

State the possible rational zeros for each function.

3) $f(x) = 64x^6 - 1$ $\pm 1, \pm \frac{1}{2}, \pm \frac{1}{4}, \pm \frac{1}{8}, \pm \frac{1}{16}, \pm \frac{1}{32}, \pm \frac{1}{64}$

4) $f(x) = 2x^6 - 3x^4 - 8x^2 + 12$

 $\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 12, \pm \frac{1}{2}, \pm \frac{3}{2}$

Find all zeros.

5) $f(x) = x^3 + x^2 + x + 21$

 $\{-3, 1 + i\sqrt{6}, 1 - i\sqrt{6}\}$

6) $f(x) = 5x^4 + 4x^3 - x^2$

 $\left\{0 \text{ mult. } 2, -1, \frac{1}{5}\right\}$

$$7) f(x) = 2x^5 + 7x^4 + 7x^3 + 2x^2$$

$$\left\{ 0 \text{ mult. } 2, -2, -\frac{1}{2}, -1 \right\}$$

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

$$\left\{ 0, 1, -\frac{1}{3} \right\}$$

$$9) f(x) = 5x^4 - 47x^2 + 18$$

$$\left\{ \frac{\sqrt{10}}{5}, -\frac{\sqrt{10}}{5}, 3, -3 \right\}$$

$$10) f(x) = x^3 - 27$$

$$\left\{ 3, \frac{-3 + 3i\sqrt{3}}{2}, \frac{-3 - 3i\sqrt{3}}{2} \right\}$$