

Assignment

Date _____ Period _____

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State the possible rational zeros for each function. Then find all rational zeros.

1) $f(x) = 3x^5 + 9x^4 + 5x^3 + 15x^2 + 2x + 6$

2) $f(x) = x^3 + 4x^2 - 4x - 21$

3) $f(x) = 3x^3 - 14x^2 + 24x - 27$

4) $f(x) = 3x^5 - 6x^4 - 14x^3 + 28x^2 - 5x + 10$

5) $f(x) = x^3 + 8x^2 + 18x + 15$

6) $f(x) = 9x^5 + 3x^4 - 21x^3 - 7x^2 + 6x + 2$

$$7) f(x) = 10x^5 - 2x^4 + 25x^3 - 5x^2 + 15x - 3$$

$$8) f(x) = 3x^4 + 19x^2 - 14$$

Find all zeros.

$$9) f(x) = x^3 + 2x^2 - 39x + 20$$

$$10) f(x) = 3x^5 - 15x^4 - 26x^3 + 130x^2 + 48x - 240$$

11) $f(x) = 3x^4 - 26x^2 + 16$

12) $f(x) = 4x^5 + 6x^4 + 22x^3 + 33x^2 - 80x - 120$

13) $f(x) = 4x^3 + x^2 - 4x - 1$

14) $f(x) = 5x^5 + 15x^4 - 24x^3 - 72x^2 + 27x + 81$

15) $f(x) = 5x^4 - 24x^2 + 27$

16) $f(x) = 15x^5 - 9x^4 - 80x^3 + 48x^2 + 105x - 63$

Answers to Assignment (ID: 1)

- 1) Possible rational zeros: $\pm 1, \pm 2, \pm 3, \pm 6$
 Rational zeros: $\{-3\}$
- 2) Possible rational zeros: $\pm 1, \pm 3, \pm 7, \pm 21$
 Rational zeros: $\{-3\}$
- 3) Possible rational zeros: $\pm 1, \pm 3, \pm 9, \pm 27, \pm \frac{1}{3}$
 Rational zeros: $\{3\}$
- 4) Possible rational zeros:
 $\pm 1, \pm 2, \pm 5, \pm 10, \pm \frac{1}{3}, \pm \frac{2}{3}, \pm \frac{5}{3}, \pm \frac{10}{3}$
 Rational zeros: $\{2\}$
- 5) Possible rational zeros: $\pm 1, \pm 3, \pm 5, \pm 15$
 Rational zeros: $\{-5\}$
- 6) Possible rational zeros:
 $\pm 1, \pm 2, \pm \frac{1}{3}, \pm \frac{2}{3}, \pm \frac{1}{9}, \pm \frac{2}{9}$
 Rational zeros: $\left\{-\frac{1}{3}\right\}$
- 7) Possible rational zeros:
 $\pm 1, \pm 3, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{1}{5}, \pm \frac{3}{5}, \pm \frac{1}{10}, \pm \frac{3}{10}$
 Rational zeros: $\left\{\frac{1}{5}\right\}$
- 8) Possible rational zeros:
 $\pm 1, \pm 2, \pm 7, \pm 14, \pm \frac{1}{3}, \pm \frac{2}{3}, \pm \frac{7}{3}, \pm \frac{14}{3}$
 Rational zeros: None
- 9) $\left\{5, \frac{-7 + \sqrt{65}}{2}, \frac{-7 - \sqrt{65}}{2}\right\}$
- 10) $\left\{5, \frac{2\sqrt{6}}{3}, -\frac{2\sqrt{6}}{3}, \sqrt{6}, -\sqrt{6}\right\}$
- 11) $\left\{2\sqrt{2}, -2\sqrt{2}, \frac{\sqrt{6}}{3}, -\frac{\sqrt{6}}{3}\right\}$
- 12) $\left\{-\frac{3}{2}, \frac{\sqrt{10}}{2}, -\frac{\sqrt{10}}{2}, 2i\sqrt{2}, -2i\sqrt{2}\right\}$
- 13) $\left\{-\frac{1}{4}, -1, 1\right\}$
- 14) $\left\{-3, \sqrt{3}, -\sqrt{3}, \frac{3\sqrt{5}}{5}, -\frac{3\sqrt{5}}{5}\right\}$
- 15) $\left\{\sqrt{3}, -\sqrt{3}, \frac{3\sqrt{5}}{5}, -\frac{3\sqrt{5}}{5}\right\}$
- 16) $\left\{\frac{3}{5}, \frac{\sqrt{21}}{3}, -\frac{\sqrt{21}}{3}, \sqrt{3}, -\sqrt{3}\right\}$