

Class Time Examples

Date _____

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

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

2) $f(x) = 2x^5 + 11x^4 - 43x^3 + 33x^2$

3) $f(x) = 4x^5 + 12x^4 - x^3 - 3x^2$

4) $f(x) = 3x^5 - 12x^4 + x^3 + 22x^2$

5) $f(x) = 4x^5 + x^4 + 8x^3 + 2x^2$

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

7) $f(x) = 5x^5 + 39x^4 - 33x^3 + 5x^2$

8) $f(x) = 2x^5 - 7x^4 - 12x^3 + 27x^2$

Answers to Class Time Examples

1) Possible rational zeros: $0, \pm 1, \pm \frac{1}{3}$

Rational zeros: $\left\{0 \text{ mult. } 2, -1 \text{ mult. } 2, \frac{1}{3}\right\}$

3) Possible rational zeros:

$$0, \pm 1, \pm 3, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{1}{4}, \pm \frac{3}{4}$$

Rational zeros: $\left\{0 \text{ mult. } 2, -3, \frac{1}{2}, -\frac{1}{2}\right\}$

5) Possible rational zeros: $0, \pm 1, \pm 2, \pm \frac{1}{2}, \pm \frac{1}{4}$

Rational zeros: $\left\{0 \text{ mult. } 2, -\frac{1}{4}\right\}$

7) Possible rational zeros: $0, \pm 1, \pm 5, \pm \frac{1}{5}$

Rational zeros: $\left\{0 \text{ mult. } 2, \frac{1}{5}\right\}$

2) Possible rational zeros:

$$0, \pm 1, \pm 3, \pm 11, \pm 33, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{11}{2}, \pm \frac{33}{2}$$

Rational zeros: $\left\{0 \text{ mult. } 2, \frac{3}{2}\right\}$

4) Possible rational zeros:

$$0, \pm 1, \pm 2, \pm 11, \pm 22, \pm \frac{1}{3}, \pm \frac{2}{3}, \pm \frac{11}{3}, \pm \frac{22}{3}$$

Rational zeros: $\{0 \text{ mult. } 2, 2\}$

6) Possible rational zeros: $0, \pm 1, \pm \frac{1}{2}$

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

8) Possible rational zeros:

$$0, \pm 1, \pm 3, \pm 9, \pm 27, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{9}{2}, \pm \frac{27}{2}$$

Rational zeros: $\left\{0 \text{ mult. } 2, \frac{3}{2}\right\}$