Rational zeros Name_____

Date_____

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

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

2) $f(x) = 9x^3 - 6x^2 + 1$

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

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

5) $f(x) = 5x^3 + 9x^2 + 3x - 1$

6) $f(x) = 3x^3 + 20x^2 + 14x - 55$

7) $f(x) = x^3 + 11x^2 + 34x + 20$

8) $f(x) = 2x^3 - 2x^2 - 5x - 21$

Answers to

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

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

2) Possible rational zeros: $\pm 1, \pm \frac{1}{3}, \pm \frac{1}{9}$

   Rational zeros: $\left\{-\frac{1}{3}\right\}$

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

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

4) Possible rational zeros:

   $\pm 1, \pm 7, \pm \frac{1}{2}, \pm \frac{7}{2}, \pm \frac{1}{3}, \pm \frac{7}{3}, \pm \frac{1}{6}, \pm \frac{7}{6}$

   Rational zeros: $\left\{-\frac{1}{2}\right\}$

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

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

6) Possible rational zeros:

   $\pm 1, \pm 5, \pm 11, \pm 55, \pm \frac{1}{3}, \pm \frac{5}{3}, \pm \frac{11}{3}, \pm \frac{55}{3}$

   Rational zeros: $\{-5\}$

7) Possible rational zeros:

   $\pm 1, \pm 2, \pm 4, \pm 5, \pm 10, \pm 20$

   Rational zeros: $\{-5\}$

8) Possible rational zeros:

   $\pm 1, \pm 3, \pm 7, \pm 21, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{7}{2}, \pm \frac{21}{2}$

   Rational zeros: $\{3\}$