Algebra 2 Name_____



# Find All Roots/Zeros Quiz Review

Date_____ Period____

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

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

Possible rational zeros: $\pm 1, \pm 3$

Zeros: $\{-3, 1 \text{ mult. } 2\}$

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

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

Zeros: $\left\{1, \frac{1}{2}, -1\right\}$

3) $f(x) = 4x^3 + 8x^2 - 5x - 10$

Possible rational zeros:

$\pm 1, \pm 2, \pm 5, \pm 10, \pm \frac{1}{2}, \pm \frac{5}{2}, \pm \frac{1}{4}, \pm \frac{5}{4}$

Zeros: $\left\{-2, \frac{\sqrt{5}}{2}, -\frac{\sqrt{5}}{2}\right\}$

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

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

Zeros: $\left\{-\frac{1}{3}, -1, 1\right\}$

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

Possible rational zeros:

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

Zeros: $\left\{3, \frac{\sqrt{6}}{2}, -\frac{\sqrt{6}}{2}\right\}$

6) $f(x) = 3x^3 - 8x^2 - 36x + 5$

Possible rational zeros: $\pm 1, \pm 5, \pm \frac{1}{3}, \pm \frac{5}{3}$

Zeros: $\left\{5, \frac{-7 + \sqrt{61}}{6}, \frac{-7 - \sqrt{61}}{6}\right\}$

7) $f(x) = 9x^3 - 15x^2 - 12x - 2$

Possible rational zeros:

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

Zeros: $\left\{-\frac{1}{3}, \frac{3 + \sqrt{15}}{3}, \frac{3 - \sqrt{15}}{3}\right\}$

8) $f(x) = 5x^3 - x^2 + 25x - 5$

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

Zeros: $\left\{\frac{1}{5}, i\sqrt{5}, -i\sqrt{5}\right\}$