

## Finding Rational Zeros

Name Key  
Date \_\_\_\_\_ Per \_\_\_\_\_

List the *possible* rational zeros of each function. Without the use of a graphing calculator, determine which, if any, are *actual* zeros of the function.

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

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

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

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

5.  $f(x) = -4x^3 + 15x^2 - 8x - 3$

6.  $f(x) = -2x^4 + 13x^3 - 21x^2 + 2x + 8$

(Hint: Start checking with 2)

①  $\frac{\text{factors of } 2}{\text{factors of } 1} : \frac{\pm 1, \pm 2}{\pm 1} = \pm 1, \pm 2$       Zeros: 1, 3.562, -0.562

②  $\frac{\text{factors of } -3}{\text{factors of } 1} : \frac{\pm 1, \pm 3}{\pm 1} = \pm 1, \pm 3$       Zeros: -3, -1, 1

③  $\frac{\pm 1, \pm 16, \pm 4, \pm 2, \pm 8}{\pm 1} = \pm 1, \pm 2, \pm 4, \pm 8, \pm 16$       Zeros: -2, 2, 4

④  $\frac{\pm 1, \pm 4, \pm 2}{\pm 1} = \pm 1, \pm 4, \pm 2$       Zeros: -2, -1, 2

⑤  $\frac{\pm 1, \pm 3}{\pm 1, \pm 4, \pm 2} = \pm 1, \pm 1/4, \pm 1/2, \pm 3, \pm 3/4, \pm 3/2$       Zeros: -1/4, 1, 3

⑥  $\frac{\pm 1, \pm 8, \pm 2, \pm 4}{\pm 1, \pm 2} = \pm 1, \pm 1/2, \pm 8, \pm 4, \pm 2$       Zeros: -1/2, 1, 2, 4