

## 7.2 practice

Date \_\_\_\_\_ Period \_\_\_\_\_

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

1)  $x^3 + 3x^2 + 5x + 15 = 0$

2)  $x^3 + 3x^2 + x + 3 = 0$

3)  $x^4 + 10x^2 + 24 = 0$

4)  $x^4 - 5x^3 - 13x^2 - 7x = 0$

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

5)  $f(x) = x^3 - 11x^2 - 25x - 13$

6)  $f(x) = 10x^4 + 17x^3 + 3x^2 - 5x - 1$

7)  $f(x) = 2x^3 + 5x^2 - 16x - 9$

8)  $f(x) = 3x^3 - 14x^2 - 12x + 45$

## Answers to 7.2 practice (ID: 1)

- 1) Possible rational roots:  $\pm 1, \pm 3, \pm 5$   
 Roots:  $\{-3, i\sqrt{5}, -i\sqrt{5}\}$
- 2) Possible rational roots:  $\pm 1, \pm 3$   
 Roots:  $\{-3, i, -i\}$
- 3) Possible rational roots:  
 $\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 8, \pm 12, \pm 24$   
 Roots:  $\{2i, -2i, i\sqrt{6}, -i\sqrt{6}\}$
- 4) Possible rational roots:  $0, \pm 1, \pm 7$   
 Roots:  $\{0, -1 \text{ mult. } 2, 7\}$
- 5) Possible rational zeros:  $\pm 1, \pm 13$   
 Zeros:  $\{13, -1 \text{ mult. } 2\}$
- 6) Possible rational zeros:  $\pm 1, \pm \frac{1}{2}, \pm \frac{1}{5}, \pm \frac{1}{10}$   
 Zeros:  $\left\{-\frac{1}{5}, \frac{1}{2}, -1 \text{ mult. } 2\right\}$
- 7) Possible rational zeros:  
 $\pm 1, \pm 3, \pm 9, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{9}{2}$   
 Zeros:  $\left\{-\frac{1}{2}, -1 + \sqrt{10}, -1 - \sqrt{10}\right\}$
- 8) Possible rational zeros:  
 $\pm 1, \pm 3, \pm 5, \pm 9, \pm 15, \pm 45, \pm \frac{1}{3}, \pm \frac{5}{3}$   
 Zeros:  $\left\{\frac{5}{3}, \frac{3 + 3\sqrt{5}}{2}, \frac{3 - 3\sqrt{5}}{2}\right\}$