Name _____

11-5B **Lesson Master**   **Questions on SPUR Objectives**
See Student Edition pages 792–795 for objectives.

PROPERTIES   Objective G

In 1–6, determine whether, according to the Rational-Root Theorem, each number could be a root of a polynomial $p(x)$ with the given first term and constant term.

1. first term $2x^7$ and constant term 6

   a. 2 _____   **b.** –1 _____   **c.** 3 _____   **d.** –6 _____

2. first term $5x^4$ and constant term 8

   a. –1 _____   **b.** $-\frac{4}{3}$ _____   **c.** 3 _____   **d.** –8 _____

3. first term $14x^5$ and constant term 3

   a. –7 _____   **b.** $-\frac{1}{3}$ _____   **c.** 3 _____   **d.** $\frac{3}{7}$ _____

4. first term $3x^2$ and constant term 4

   a. 2 _____   **b.** –1 _____   **c.** 3 _____   **d.** –2 _____

5. first term $6x^4$ and constant term 2

   a. –2 _____   **b.** $-\frac{2}{3}$ _____   **c.** 3 _____   **d.** –1 _____

6. first term $2x^6$ and constant term 12

   a. –2 _____   **b.** $-\frac{1}{2}$ _____   **c.** 3 _____   **d.** 12 _____

In 7–9, use the Rational-Root Theorem to determine whether the given number could be a root of either polynomial.

7. $\frac{2}{3}$

   a. $3x^2 - 15x - 18$ _____   **b.** $6x^2 - 15x - 8$ _____

8. $\frac{1}{3}$

   a. $6x^3 - 13x^2 + x + 2$ _____   **b.** $15x^3 - 22x^2 - 5x$ _____

9. $\frac{4}{5}$

   a. $3x^2 + 2x + 8$ _____   **b.** $10x^2 - 11x + 4$ _____

In 10–13, a. use the Rational-Root Theorem to list all possible rational roots of the polynomial, and b. find all rational roots.

10. $30x^3 - 31x^2 + 10x - 1$

   a. _____   **b.** _____

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11. $x^4 + 2x^3 + x^2$

a. _____   b. _____

12. $7x^5 - 3x^4 - 2$

a. _____   b. _____

13. $64x^3 - 1$

a. _____   b. _____

REPRESENTATIONS Objectives J, K

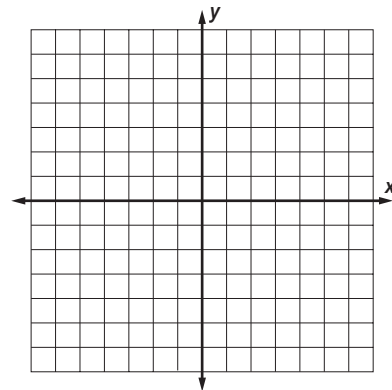14. Consider the polynomial $p(x) = 24x^2 + 53x - 7$.

a. List the possible rational roots according to the Rational-Root Theorem.

_____

b. Sketch a graph of p for $-5 \le x \le 5$ at the right.

c. According to the graph, which of the possible negative

rational roots could be an actual root? _____

d. Determine whether it is actually a root. _____

e. According to the graph, which of the possible positive
rational roots could be an actual root?

_____

19. Consider the polynomial $f(x) = -3x^5 + 20x^2 - 8$.

a. List the possible rational roots according to the Rational-Root Theorem.

_____

b. **Multiple Choice** Based on your answer to Part a, which
would be a good domain over which to graph f? _____

A $-20 \le x \le 20$ B $-10 \le x \le 10$ C $-4 \le x \le 4$

c. At the right, sketch a graph of f over the domain
you chose in Part b.

d. Determine all rational roots of f. _____