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Name _____

Class _____

Problem 1 – Zeros of a parabola

- Locate the zeros of the function by dragging the point on the graph on page 1.3.

- Find the exact zeros of the function using the spreadsheet on page 1.4.

Problem 2 – Zeros of a cubic function

- Locate the zeros of the function by dragging the point on the graph on page 2.1.

- Identify all the possible rational zeros using the Rational Zero Theorem and enter these results in the spreadsheet on page 2.2. Then find the zeros of the function.

Problem 3 – A graphical look at the possible zeros of a parabola

- Click the slider to change the value of b (which changes the parabola). How is it possible that the graph sometimes has zeros that don't cross at any of the possible rational zeros that are labeled on the graph?

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Exercises

1. Use the method described in the activity to find the rational zeros for $-10x^3 + 15x^2 + 16x - 12$.

2. How could synthetic division be used to help find the other zeros for the polynomial in Exercise 1? Use this to find the other zeros.

3. Is it possible for a polynomial to not have any rational zeros? Or any zeros at all? Explain.

4. An object is launched vertically from a point s_0 above the ground at an initial speed of v_o feet per second. Its vertical distance above the ground is given by the equation $s = -16t^2 + v_0 t + s_0$. Determine how long an object with velocity of 300 ft/sec will stay in the air if thrown upwards from a height of 5 feet.