

Algebra II Unit 3 Review

Name: _____

Determine the maximum number of roots each function has.

1. $-x^5 - 2$
5

2. $x^3 + 5x^2 + 2x - 8$
3

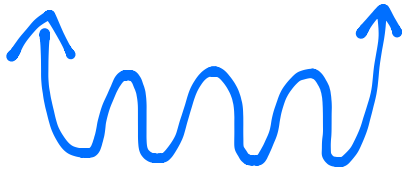
List all the possible roots for the following polynomials.

3. $6x^4 + 8x + 4x + 2$
 $\pm 2, \pm 1, \pm \frac{1}{2}, \pm \frac{1}{3}, \pm \frac{1}{6}, \pm \frac{2}{3}$

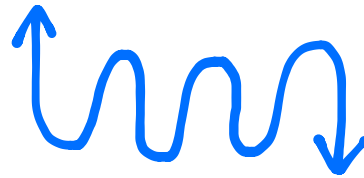
4. $3x^5 - 4x^3 + 8x + 7$
 $\pm 7, \pm 1, \pm \frac{1}{3}, \pm \frac{7}{3}$

Sketch the possible graph for the polynomial. State whether it is an odd or even polynomial.

5. $7x^8 + 2x^3 - 5x - 8$



6. $-5x^7 + 3x^4 - 2x + 6$



Find the depressed polynomial using synthetic division.

7. $(x^2 + 8x + 10) \div (x - 2)$

$x + 10 + \frac{30}{x-2}$

8. $(3x^5 - 4x^3 + 8x + 7) \div (x + 1)$

$3x^4 - 3x - x^2 + x + 7$

Find all the zeros of each function.

9. $2x^3 + x^2 - 11x - 10 = 0$

$x = -2 \quad x = -1 \quad x = \frac{5}{2}$

10. $x^3 - 3x^2 + 2x - 6 = 0$

$x = 3 \quad x = \frac{\pm\sqrt{-8}}{2} = \pm i\sqrt{2}$

11. $4x^3 - 13x^2 + 7x + 2 = 0$

$x = 1 \quad x = \frac{9 \pm \sqrt{113}}{8}$

Write the simplest polynomial function with the given zeros.

12. $-2, 1,$ and 5

$$x^3 - 4x^2 - 7x + 10$$

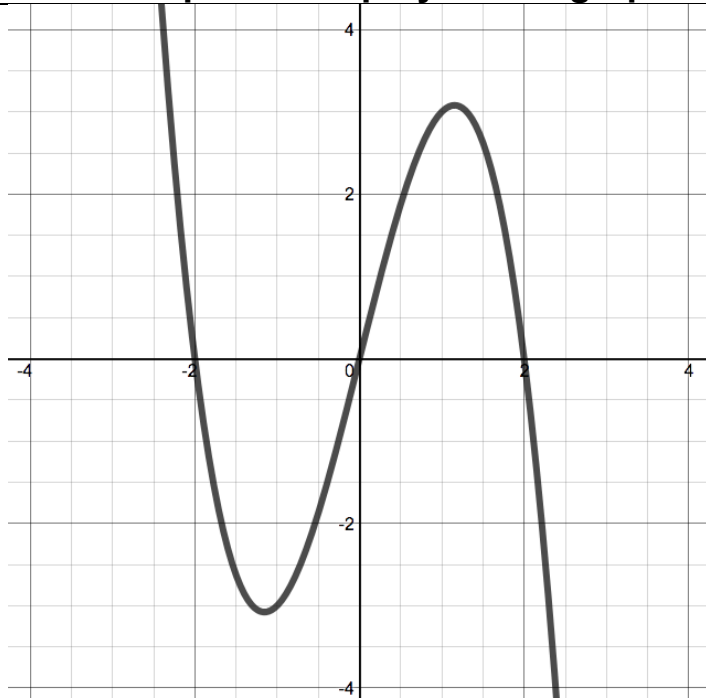
13. $-2, 5 - 2i$

$$x^3 - 8x^2 + 9x + 58$$

14. $5, \sqrt{3}$

$$x^3 - 5x^2 - 3x + 15$$

Label the parts of a polynomial graph.



15.

Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

Interval of Increase: $(-1, 1)$

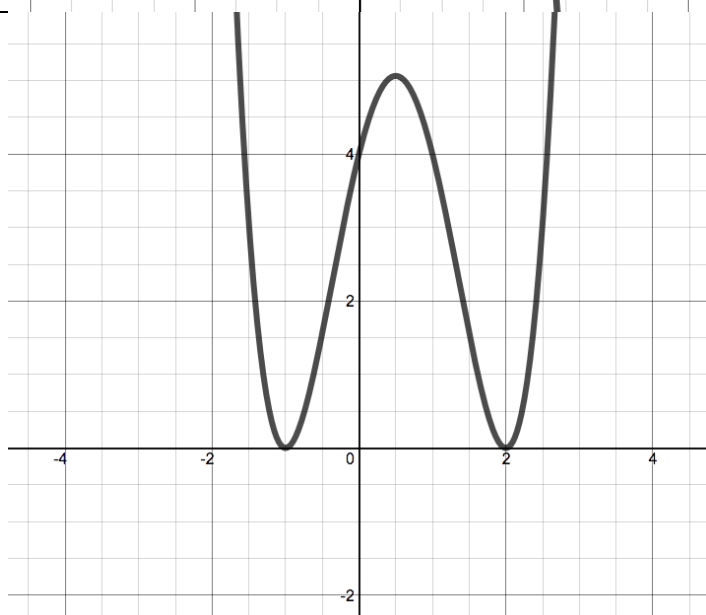
Interval of Decrease: $(-\infty, -1)$ $(1, \infty)$

Max (local or absolute): $(-1, -3)$

Minimum (local or absolute): $(-2, 0)$ $(0, 0)$ $(2, 0)$

x-intercepts: $(-2, 0)$ $(0, 0)$ $(2, 0)$

y-intercepts: $(0, 0)$



16.

Domain: $(-\infty, \infty)$

Range: $[2, \infty)$

Interval of Increase: $(-1, 1)$ $(2, \infty)$

Interval of Decrease: $(-\infty, -1)$ $(1, 2)$

Max (local or absolute): $(1, 5)$

Minimum (local or absolute): $(-1, 0)$ $(2, 0)$

x-intercepts: $(-1, 0)$ $(2, 0)$

y-intercepts: $(0, 4)$