

1.

- a. Write the equation of the line that passes through the points (4, 6) and (2, 3).

$$y = \frac{3}{2}x + 0$$

- b. Write the equation of the line that is perpendicular to the line in part A and passes through (6, 2).

$$y = -\frac{2}{3}x + 6$$

2. Write the equation of a parabola with a double root of -3 and passes through (0, -5).

$$y = -\frac{5}{9}(x^2 + 6x + 9)$$

- a. Does this parabola open up or
- down
- ? How do you know?

a value is -

3. A professional diver jumps off the diving platform and lands in the pool below. The equation that models this situation is
- $h(t) = -16t^2 + 20t + 40$
- , where "h(t)" represents the height in feet and "t" represents time in seconds.

- a. What is the divers maximum height above the water?
- 46.25 ft

- b. How long does the diver have before she hits the water?
- 2.3 sec

- c. What height is the diving platform?
- 40 ft

4. Find the zeroes.

- a. By hand. Leave answers in simplified radical form.

$$y = 3x^2 - 7x + 5$$

$$x = \frac{7 \pm i\sqrt{11}}{6}$$

- b. Use your calculator.

$$y = .5x^3 - 4x - 2$$

$$x = -2.53$$

$$x = -.52$$

$$x = 3.05$$

5. Simplify:

a. $\sqrt{-112}$

$$4i\sqrt{7}$$

b. i^{37}

$$1i$$

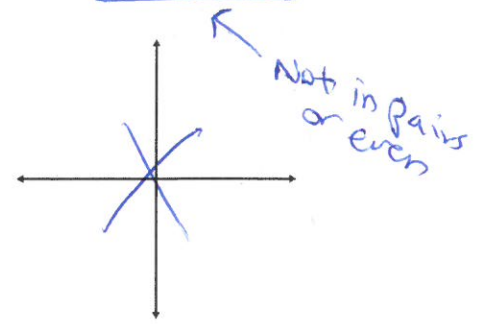
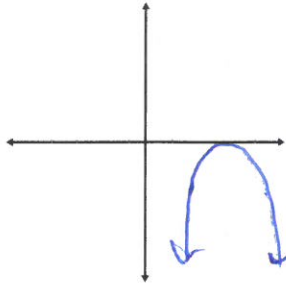
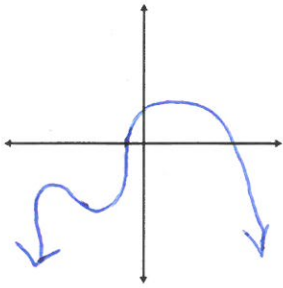
c. $(7 - 4i) - (2 + 3i)$

$$5 - 7i$$

d. $(5 - 4i)(2 + 3i)$

$$22 + 7i$$

6. Sketch the polynomial with the given features. If the polynomial cannot be drawn, explain why.
- a. Degree 4, 2 Real Roots, LC - b. Degree 2, 1(double) real root, negative "a" value c. Degree 5, 5 Imaginary Roots, LC -



7. Decide whether or not the following are polynomials in one variable. If they are not, explain why.

a. $2x - x^{-2}$

No

b. $\frac{1}{5}a^4 - 5a + \frac{4}{5}a^2$

Yes

c. $6y^4 - 3 + 7z^{\frac{3}{4}} - 5x$

No

8. Use the table of values to answer the following questions:

X	Y
-4	10
-3	4
-2	2
-1	3
0	5
1	8
2	12
3	2
4	-4
5	0
6	10

- a. State the minimum degree possible 4

- b. List the real roots (either exactly or between 2 integers)

Btw 3 & 4
5

- c. State the number of imaginary roots 2

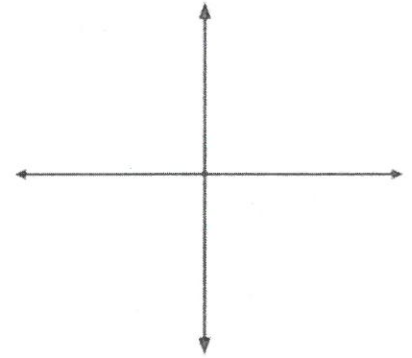
- d. State the number of relative minimum(s) 2

- e. State the number of relative maximum(s) 1

- f. State the end behaviors

left: $+\infty$ right: $+\infty$

- g. State whether the leading coefficient is positive or negative? Explain.



9. Write the equation of a polynomial with the real roots of 4, -1, and -3 and passes through (1, -6).

$$y = \frac{1}{4}(x^3 - 13x - 12)$$