Panel 1 (top left)

Write a possible equation of a polynomial with the given zeros. Give your answer in Standard Form.

Zeros: -4(single), 3(double), 4(single)
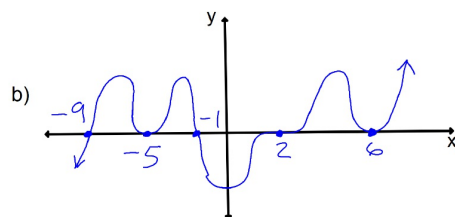
$$y = (x+4)(x-3)^2(x-4)$$

$$(x^2-16)(x^2-6x+9)$$

	x^2	$-6x$	$+9$
x^2	x^4	$-6x^3$	$+9x^2$
-16	$-16x^2$	$+96x$	-144

$$y = x^4 - 6x^3 - 7x^2 + 96x - 144$$

Panel 2 (top right)

Write a possible equation   Write the EXACT equation

(-7, 3)

(-5, 11)
x y
(-7, 3)

$$y = a(x+7)^2 + 3$$

Since you only have the vertex there would be an infinite number of equations possible. You don't have another point in order to find the exact value of a.

$$y = 2(x+7)^2 + 3$$

Given the 2nd point this is the ONLY equation.

$$y = a(x+7)^2 + 3$$
$$11 = a(-5+7)^2 + 3$$
$$11 = a(2)^2 + 3$$
$$11 = 4a + 3$$
$$\frac{-3 \qquad -3}{}$$
$$\frac{8}{4} = \frac{4a}{4} \Rightarrow a = 2$$

Panel 3 (bottom left)

From the Bellwork:

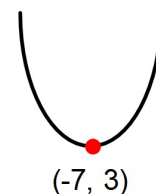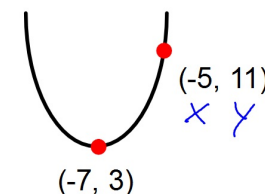2. Write a possible equation for each polynomial shown below.

b)

$$y = a(x+9)(x+5)^2(x+1)(x-2)^3(x-6)^2$$

There is some unknown coefficient a for this polynomial but you don't have enough information to find it.

Panel 4 (bottom right)

Write the EXACT equation of a polynomial with the given single zeros. Give your answer in Factored Form with the proper value of a.
Zeros are 1, -4, 2   The point (-3, 200) is on the graph.
x y

$$y = a(x-1)(x+4)(x-2)$$
$$200 = a(-3-1)(-3+4)(-3-2)$$
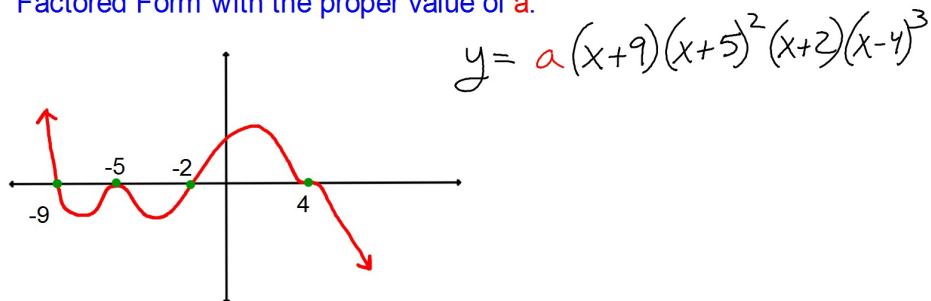$$200 = a(-4)(1)(-5)$$
$$\frac{200}{20} = \frac{a \cdot 20}{20} \Rightarrow a = 10$$

$$y = 10(x-1)(x+4)(x-2)$$

Using the given point you can find the exact value of a for this polynomial.

Write the EXACT equation of this Polynomial given the polynomial passes through the point (-3, -57624). Give your answer in Factored Form with the proper value of a.

$$y = a(x+9)(x+5)^2(x+2)(x-4)^3$$

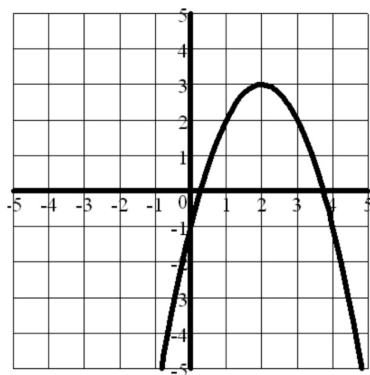$$-57624 = a(-3+9)(-3+5)^2(-3+2)(-3-4)^3$$

$$-57624 = a(6)(2)^2(-1)(-7)^3$$

$$\frac{-57624}{8232} = \frac{a \cdot 8232}{8232} \implies a = -7$$

$$y = -7(x+9)(x+5)^2(x+2)(x-4)^3$$

You can now finish Hwk #23

Practice Sheet Graphs of Polynomials

Due Tomorrow

What is the maximum value of this function?
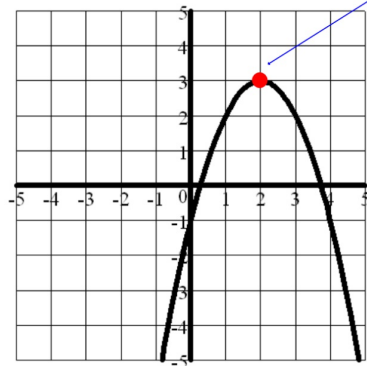
3

When does this maximum occur?

when x = 2

What is the minimum value this function?

this function has NO minimum

When asked for the value of a function, or what a function equals, you are being asked for the y-coordinate

The x-coordinate of a point tells us when a certain y-value occurs.

This point is called
the Absolute Maximum
of the function.

It is the highest point anywhere on
the entire graph.

In other words, there is no other point
on the graph that is higher than this point.

This function doesn't have an
Absolute Minimum because
there is no point on this graph that is
lower than all of the other points.
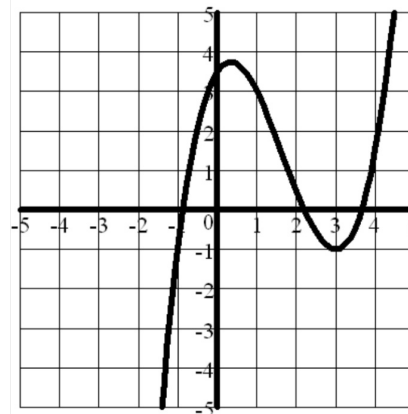
What is the Absolute Maximum of this function?

It has none

(this graph doesn't have a highest point,
it goes up forever)

What is the Absolute Minimum of this function?

It has none

(this graph doesn't have a lowest point,
it goes up forever)

Absolute Maximums and Minimums of ALL Polynomials:

ODD Degree:

Odd degree polynomials
have no Absolute Max
or Min!

Even Degree:

Even degree polynomials
must have either an Asolute
Max or an Absolute Min.