Bellwork Alg 2 Thursday, November 15, 2018

1. Find all EXACT Complex zeros by factoring. $y = 42x^5 + 48x^4 + 84x^3 + 96x^2$

2. Find all EXACT Complex zeros by first graphing. $y = x^6 + x^5 + 9x^4 + 11x^3 - 102x^2 - 80x + 160$

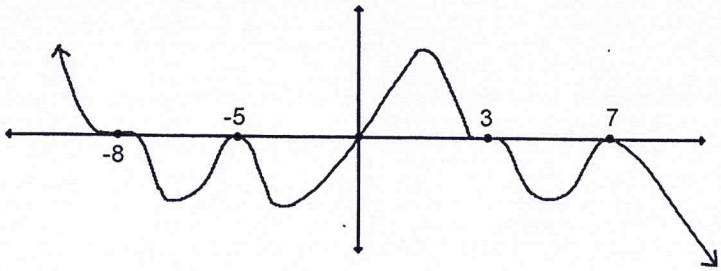
3. Use this polynomial: $y = -x^4 - 2x^3 + 4x^2 + 8x - 0.5$

Find the coordinates of all extrema and real zeros by graphing. Draw what you see on the screen. Round to the nearest hundredth as necessary.

4. Sketch this polynomial showing the correct end-behavior and correct shape at each zero. Put numbers at each zero.

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

5. Write the EXACT equation of this polynomial including the correct value of a. The graph passes through the point $(-1, -44957696)$



$y =$

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ANSWERS

1. Find all EXACT Complex zeros by factoring. $y = 42x^5 + 48x^4 + 84x^3 + 96x^2$

$6x^2(7x^3 + 8x^2 + 14x + 16) = 6x^2(7x+8)(x^2+2)$

$6x^2$: $x = 0$ — $(7x+8)$: $x = -8/7$ — (x^2+2): $x^2+2=0$, $\sqrt{x^2} = \sqrt{-2}$, $x = \pm i\sqrt{2}$

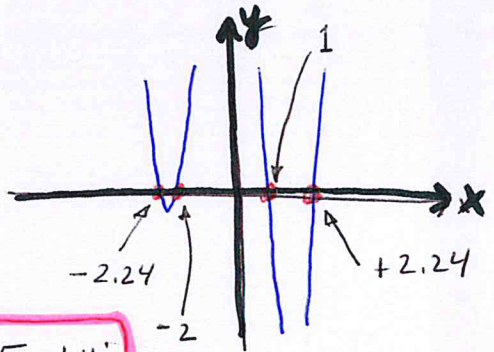
	$7x$	$+8$
x^2	$7x^3$	$+8x^2$
$+2$	$+14x$	$+16$

$x = 0, -\frac{8}{7}, \pm i\sqrt{2}$

2. Find all EXACT Complex zeros by first graphing. $y = x^6 + x^5 + 9x^4 + 11x^3 - 102x^2 - 80x + 160$

EXACT REAL ZEROS: $x = -2, 1$

1	1	1	9	11	−102	−80	160
		1	2	11	22	−80	−160
−2	1	2	11	22	−80	−160	0
		−2	0	−22	0	160	
	1	0	11	0	−80	0	



$x = -2, 1, \pm\sqrt{5}, \pm 4i$

$x^4 + 11x^2 - 80$

-80, $+16$, -5, $+11$

$(x^2-5)(x^2+16)$

$x^2 - 5 = 0$, $\sqrt{x^2} = \sqrt{5}$, $x = \pm\sqrt{5}$

$x^2 + 16 = 0$, $\sqrt{x^2} = \sqrt{-16}$, $x = \pm 4i$

3. Use this polynomial: $y = -x^4 - 2x^3 + 4x^2 + 8x - 0.5$

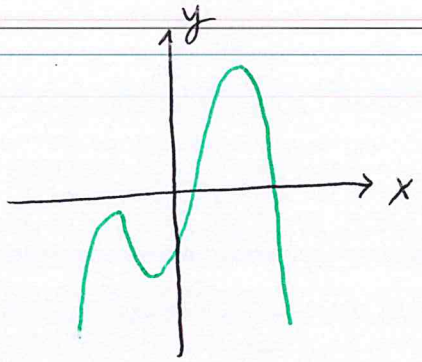
Find the coordinates of all extrema and real zeros by graphing. Draw what you see on the screen. Round to the nearest hundredth as necessary.

ABS MAX: $(1.28, 9.41)$

ABS MIN: NONE

REL MAX: $(-2, -0.5)$

REL MIN: $(-0.78, -3.73)$

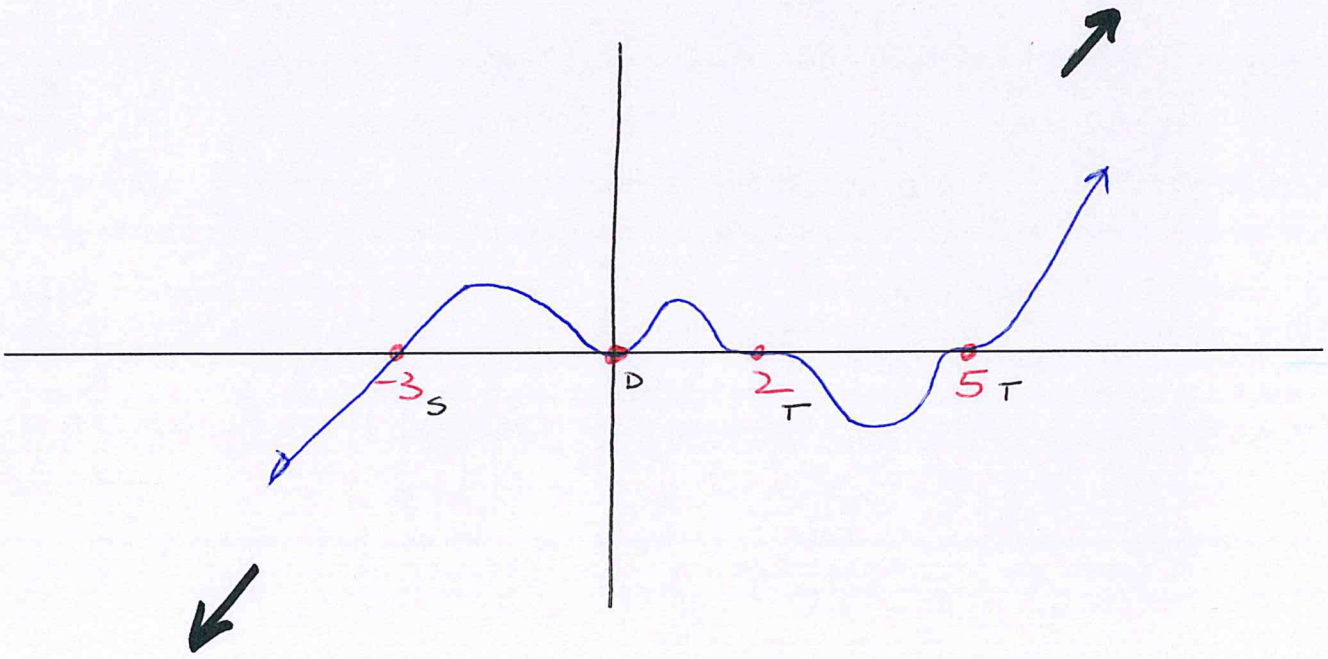


Zeros: $x = 0.06, 1.98$

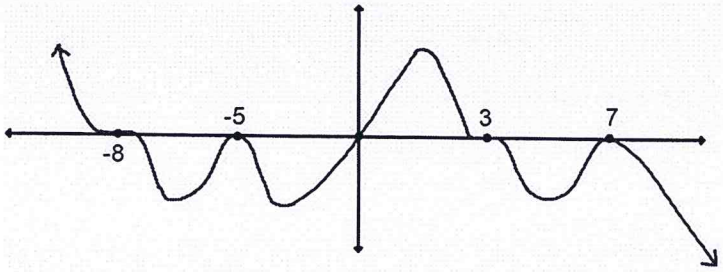
4. Sketch this polynomial showing the correct end-behavior and correct shape at each zero. Put numbers at each zero.

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

pos ODD (↙, ↗)



5. Write the EXACT equation of this polynomial including the correct value of a. The graph passes through the point $(-1, -44957696)$



$y =$ $y = -2x(x+8)^3(x+5)^2(x-3)^3(x-7)^2$

$y = a(x+8)^3(x+5)^2(x-3)^3(x-7)^2$

$-44957696 = a(-1)(7)^3(4)^2(-4)^3(-8)^2$

$-44957696 = a(-1)(343)(16)(-64)(64)$

$\frac{-44957696}{22478848} = \frac{22478848a}{22478848}$

$a = -2$