

Algebra 2 Bellwork Monday, December 8, 2014

Here are some formulas you might need:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$a^3 + b^3 = (a + b)(a^2 - ab + b^2)$$

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$$

1. State if each is a polynomial.

a) $y = 4x^3 - 9x^2 + 3ix - 11$

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

c) $f(x) = -1.7x^5 + 7x\sqrt{8} - 1$

d) $y = -11x^4 - 5\sqrt{x} + 3$

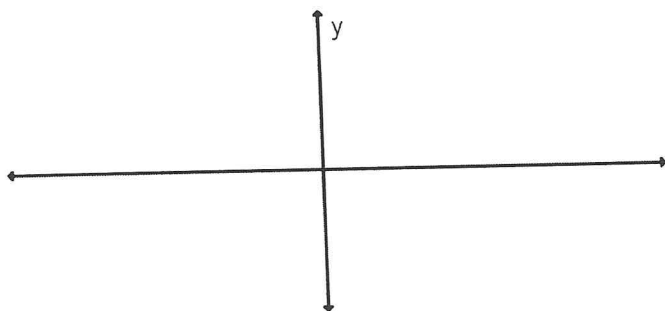
2. State the degree and leading coefficient of each polynomial then state its end behavior.

a) $y = -4x(2x + 5)^3(7 - 3x)^2(1 - 10x)$

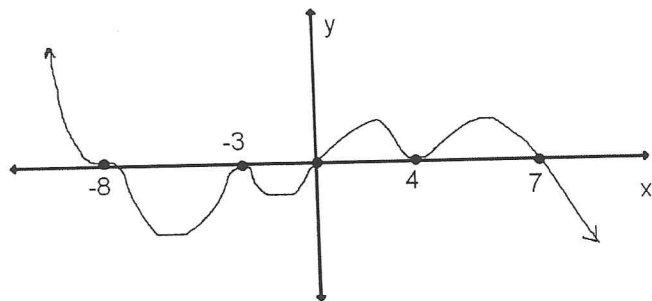
b) $y = 7x^3 + 11x^2 - x^4 + 8x + 100$

3. Sketch this function showing the proper end behavior and shape at each zero.

$$f(x) = 3x^2(6 - x)^2(7x - 1)^3(2x + 5)^3$$



4. Write a possible equation for this polynomial:



Find all EXACT solutions, real and imaginary.

5. $3x^5 - 21x^3 + 36x = 0$

6. $4x^6 - 64x^2 = 0$

7. $16x^4 + 250x = 0$

8. $4x^3 + 20x^2 + x + 5 = 0$

Here are some formulas you might need:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad a^3 + b^3 = (a+b)(a^2 - ab + b^2) \quad a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

1. State if each is a polynomial.

a) $y = 4x^3 - 9x^2 + 3ix - 11$ **NO** b) $y = 9x^2 - \frac{5}{x} + 6$ **NO**

c) $f(x) = -1.7x^5 + 7x\sqrt{8} - 1$ **YES** d) $y = -11x^4 - 5\sqrt{x} + 3$ **NO**

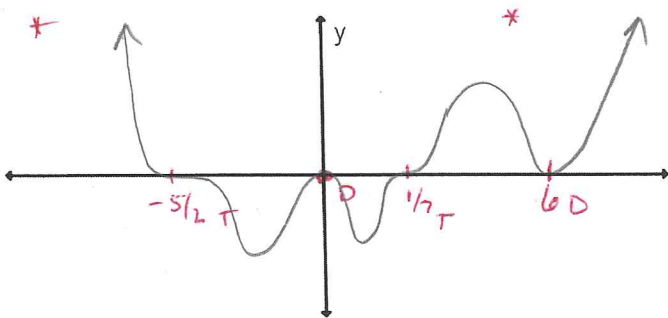
2. State the degree and leading coefficient of each polynomial then state its end behavior.

a) $y = -4x(2x+5)^3(7-3x)^2(1-10x)$ **DEG: 7 LC: 2880**

b) $y = 7x^3 + 11x^2 - x^4 + 8x + 100$ **DEG: 4 LC: -1**

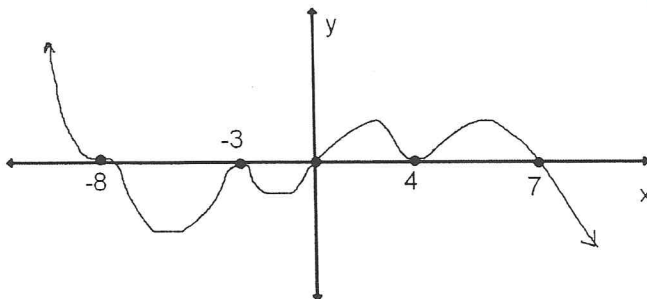
3. Sketch this function showing the proper end behavior and shape at each zero.

$f(x) = 3x^2(6-x)^2(7x-1)^3(2x+5)^3$ **EVEN (10) POS**



4. Write a possible equation for this polynomial:

NEG ODD $y = -x(x+8)^3(x+3)^2(x-4)^2(x-7)$



Find all EXACT solutions, real and imaginary.

5. $3x^5 - 21x^3 + 36x = 0$

6. $4x^6 - 64x^2 = 0$

$x = 0, \pm 2, \pm 3i$
 $3x(x^4 - 7x^2 + 12) = 0$
 $3x(x^2 - 3)(x^2 - 4) = 0$
 $3x(x^2 - 3)(x+2)(x-2) = 0$

$4x^2(x^4 - 16) = 0$
 $4x^2(x^2 - 4)(x^2 + 4) = 0$
 $4x^2(x+2)(x-2)(x^2 + 4) = 0$

$x = 0, \pm 2, \pm 2i$

7. $16x^4 + 250x = 0$

8. $4x^3 + 20x^2 + x + 5 = 0$

$2x(8x^3 + 125) = 0$

$4x^2 \begin{array}{|c|c|} \hline 4x^3 & +20x^2 \\ \hline +1 & +5 \\ \hline \end{array}$

$(x+5)(4x^2+1) = 0$

$2x(2x+5)(4x^2-10x+25) = 0$

$\rightarrow 4x^2 + 1 = 0$

$a=2x$
 $b=5$
 $x = 0, -5/2, 5 \pm 5i\sqrt{3}$

$b^2 - 4ac = -300$
 $\frac{10 \pm \sqrt{-300}}{4} = \frac{10 \pm 10i\sqrt{3}}{4}$

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

$4x^2 = -1$
 $\sqrt{x^2} = \sqrt{-1/4}$
 $x = \pm \frac{1}{2}i$