

## Assignment

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### 9.1 I can classify polynomial expressions and equations

1)  $-n^3 - 2n^2 + 7n$

2)  $3m^6 - 7m^4 + 8m$

3)  $8p^2 - p + 7$

4)  $-8$

5)  $-5x^5$

6)  $-2v^2 - 5$

$$7) -2k^2 + 4$$

$$8) 3x^6 + 7x^4 + 2 + 7x$$

**9.2 I can evaluate and simplify polynomial expressions and equations.**

$$9) f(n) = n^4 - 10n^3 + 30n^2 - 24n \text{ at } n = 4$$

$$10) f(x) = x^3 - 9x^2 + 15x + 18 \text{ at } x = 6$$

$$11) f(n) = n^4 + 6n^3 + 3n^2 - 23n - 13 \text{ at } n = -3$$

$$12) f(n) = -3n^3 + 14n^2 - 14n + 9 \text{ at } n = 3$$

$$13) f(x) = x^4 - 2x^3 - 12x^2 - 16x + 17 \text{ at } x = 5$$

$$14) f(x) = x^3 - x \text{ at } x = 2$$

15)  $f(n) = n^3 - 3n^2 - 2n + 8$  at  $n = 2$

16)  $f(a) = 3a^4 + 21a^3 + 23a^2 + 25a - 26$  at  $a = -6$

**9.3 I can factor polynomials using a variety of methods (factor theorems, synthetic division, long division, sums and differences of cubes, grouping.)**

17)  $x^3 + x^2 - 6x = 0$

18)  $x^4 - 12x^2 + 32 = 0$

19)  $x^4 + 11x^2 + 24 = 0$

20)  $x^4 - 8x^3 + 16x^2 = 0$

$$21) x^4 - x = 0$$

$$22) (-2r^3 + r^2 + 27r - 36) \div (r + 4)$$

$$23) (n^3 + 9n^2 + 29n + 45) \div (n + 5)$$

$$24) (m^3 - 10m^2 + 17m + 42) \div (m - 6)$$

$$25) (9x^3 + 19x^2 - 2x - 1) \div (x + 2)$$

$$26) (8n^3 - 80n^2 + 66n + 45) \div (n - 9)$$

$$27) (b^3 - 7b^2 - 12b + 4) \div (b + 1)$$

**9.4 I can determine the number and type of rational zeroes for a polynomial function.**

28)  $f(x) = x^3 + 5x^2 - 13x - 33$

29)  $f(x) = 3x^3 - 10x^2 + 19x - 22$

30)  $f(x) = 5x^3 + 9x^2 + 3x - 1$

31)  $f(x) = 4x^3 - 3x + 1$

32)  $f(x) = 2x^3 + 11x^2 + 12x - 4$

33)  $f(x) = 9x^3 + 12x^2 + 28x - 11$

34)  $f(x) = 2x^3 - 14x^2 + 29x - 18$

35)  $f(x) = 3x^3 + x^2 - 3x - 1$

**9.5 I can find all rational zeroes of a polynomial function.**

36)  $f(x) = 2x^3 + 7x^2 + 7x + 2$

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

38)  $f(x) = x^3 - 6x^2 + 10x - 3$

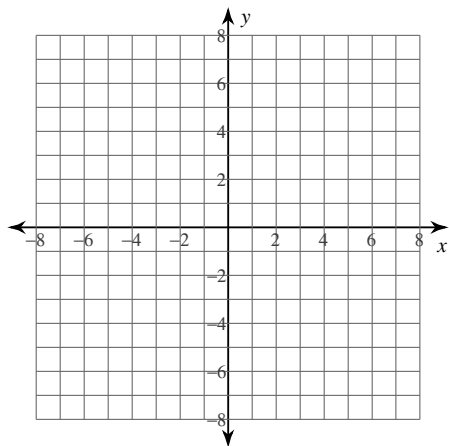
39)  $f(x) = 2x^3 + 3x^2 - 1$

40)  $f(x) = 2x^3 - 3x^2 + 1$

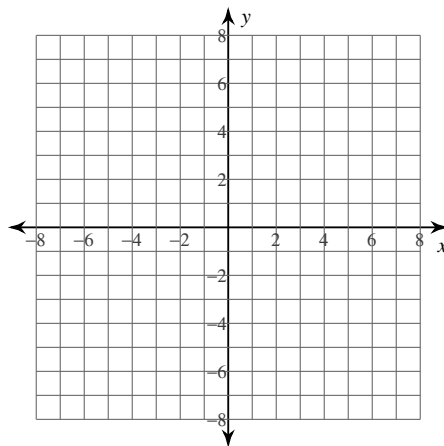
41)  $f(x) = 5x^3 + 46x^2 + 69x + 12$

**9.7 I can use technology to graph a polynomial function and approximate the zeroes, minimum, and maximum**

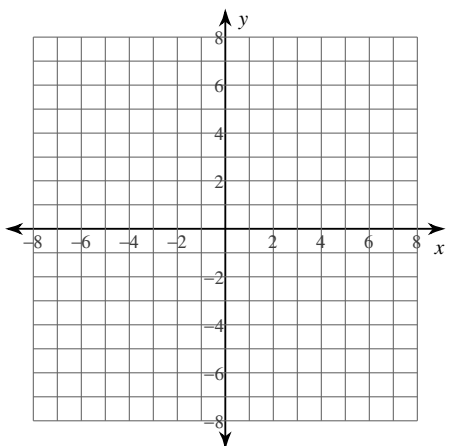
42)  $f(x) = x^3 - 2x^2 - 1$



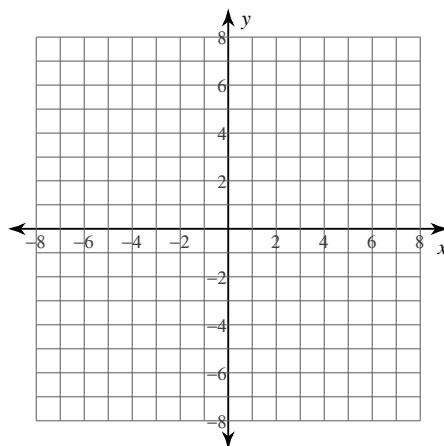
43)  $f(x) = x^4 - x^2 + 2$



44)  $f(x) = -x^3 + 4x^2 - 5x + 1$

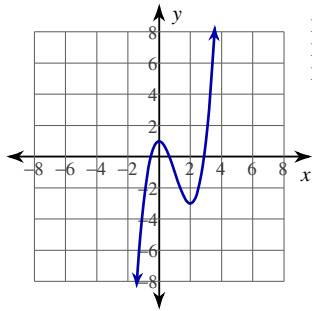


45)  $f(x) = x^3 - x^2 + 1$



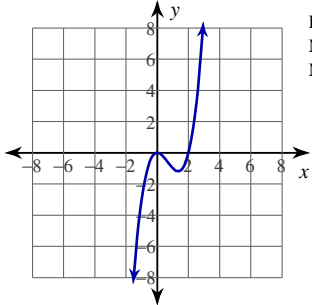
46)  $f(x) = x^3 - 2x^2 - 2$

A)



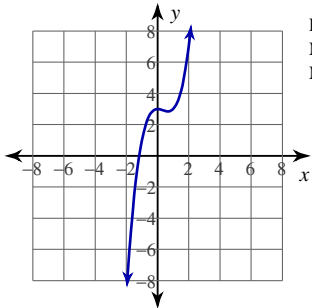
Real Zeros: -0.5, 2.9, 0.7  
Minima: (2, -3)  
Maxima: (0, 1)

B)



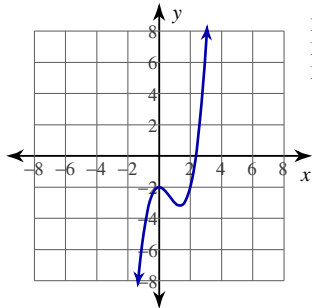
Real Zeros: 0, 2  
Minima: (1.3, -1.2)  
Maxima: (0, 0)

C)



Real Zeros: -1.2  
Minima: (0.7, 2.9)  
Maxima: (0, 3)

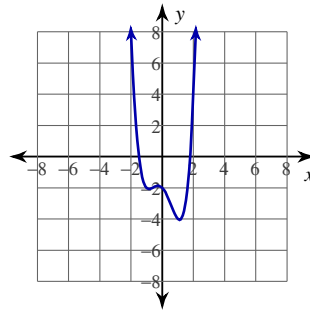
D)



Real Zeros: 2.4  
Minima: (1.3, -3.2)  
Maxima: (0, -2)

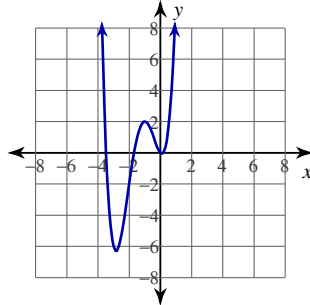
47)  $f(x) = x^4 - 2x^2 - x - 2$

A)



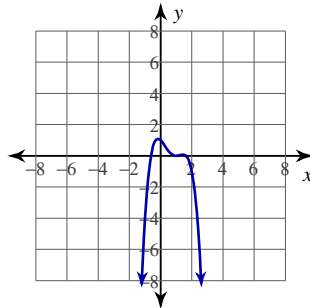
Real Zeros: -1.5, 1.8  
Minima: (-0.8, -2.1)  
(1.1, -4.1)  
Maxima: (-0.3, -1.9)

B)



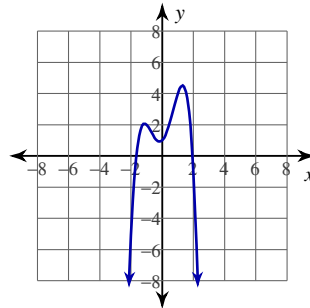
Real Zeros: -3.5, -1.7, 0, 0.2  
Minima: (-2.8, -6.3)  
(0.1, 0)  
Maxima: (-1, 2)

C)



Real Zeros: -0.6, 1, 1.6  
Minima: (1, 0)  
Maxima: (-0.2, 1.1)  
(1.4, 0.1)

D)

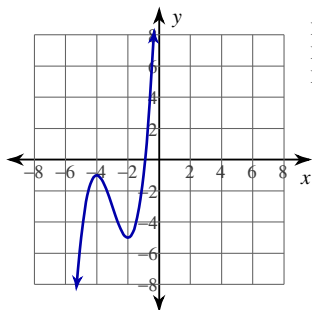


Real Zeros: -1.7, 1.9  
Minima: (-0.2, 0.9)  
Maxima: (-1.1, 2.1)  
(1.3, 4.5)



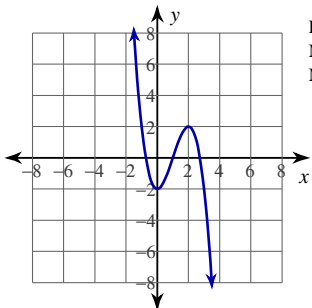
48)  $f(x) = x^3 + 9x^2 + 24x + 15$

A)



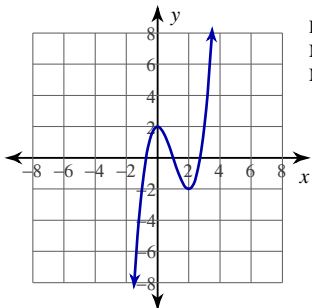
Real Zeros: -0.9  
Minima: (-2, -5)  
Maxima: (-4, -1)

B)



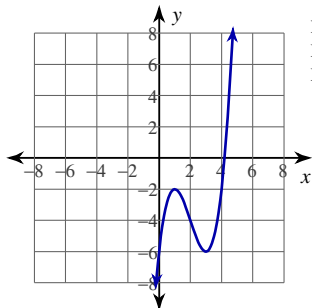
Real Zeros: -0.7, 1, 2.7  
Minima: (0, -2)  
Maxima: (2, 2)

C)



Real Zeros: -0.7, 1, 2.7  
Minima: (2, -2)  
Maxima: (0, 2)

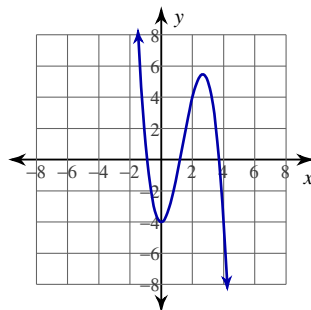
D)



Real Zeros: 4.2  
Minima: (3, -6)  
Maxima: (1, -2)

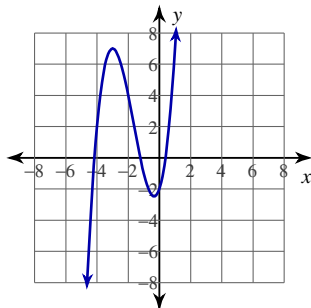
49)  $f(x) = -x^3 + 2x^2$

A)



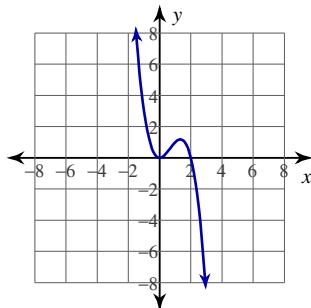
Real Zeros: -0.9, 1.2, 3.7  
Minima: (0, -4)  
Maxima: (2.7, 5.5)

B)



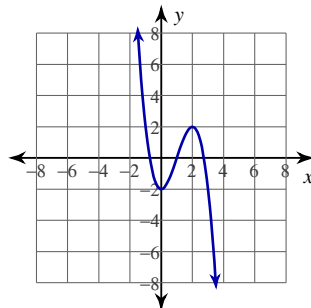
Real Zeros: -4.2, -1.2, 0.4  
Minima: (-0.3, -2.5)  
Maxima: (-3, 7)

C)



Real Zeros: 0, 2  
Minima: (0, 0)  
Maxima: (1.3, 1.2)

D)



Real Zeros: -0.7, 1, 2.7  
Minima: (0, -2)  
Maxima: (2, 2)

**9.8 I can determine the domain and range of a polynomial function.**

50)  $f(x) = x^3 - 2 - 3x$

51)  $f(x) = -x^4 + 2x^2 + x + 1$

52)  $f(x) = x^4 + x^3 - 4x^2 + 2$

53)  $f(x) = x^3 - 3x^2 + 3$

54)  $f(x) = -x^4 + 2x^2 + x - 3$

55)  $f(x) = x^4 - 4x^3 + 4x^2 + 1$

56)  $f(x) = -x^4 + 2x^2 + 2x + 3$

57)  $f(x) = -x^4 - x^3 + 2x^2 - 2$

# Answers to Assignment (ID: 1)

- 1) cubic trinomial      2) sixth degree trinomial      3) quadratic trinomial      4) constant monomial  
 5) quintic monomial      6) quadratic binomial      7) quadratic binomial  
 8) sixth degree polynomial with four terms      9) 0      10) 0

- 11) 2      12) 12      13) 12      14) 6

- 15) 0      16) 4      17)  $x(x+3)(x-2) = 0$

- 18)  $(x-2)(x+2)(x^2-8) = 0$       19)  $(x^2+8)(x^2+3) = 0$       20)  $x^2(x-4)^2 = 0$

- 21)  $x(x-1)(x^2+x+1) = 0$       22)  $-2r^2+9r-9$       23)  $n^2+4n+9$

- 24)  $m^2-4m-7$       25)  $9x^2+x-4+\frac{7}{x+2}$       26)  $8n^2-8n-6-\frac{9}{n-9}$

- 27)  $b^2-8b-4+\frac{8}{b+1}$       28)  $\pm 1, \pm 3, \pm 11, \pm 33$       29)  $\pm 1, \pm 2, \pm 11, \pm 22, \pm \frac{1}{3}, \pm \frac{2}{3}, \pm \frac{11}{3}, \pm \frac{22}{3}$

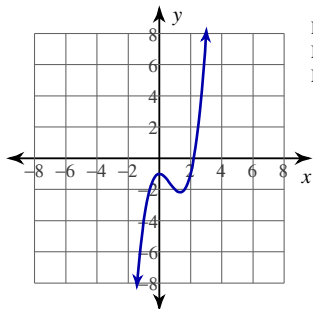
- 30)  $\pm 1, \pm \frac{1}{5}$       31)  $\pm 1, \pm \frac{1}{2}, \pm \frac{1}{4}$       32)  $\pm 1, \pm 2, \pm 4, \pm \frac{1}{2}$

- 33)  $\pm 1, \pm 11, \pm \frac{1}{3}, \pm \frac{11}{3}, \pm \frac{1}{9}, \pm \frac{11}{9}$       34)  $\pm 1, \pm 2, \pm 3, \pm 6, \pm 9, \pm 18, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{9}{2}$

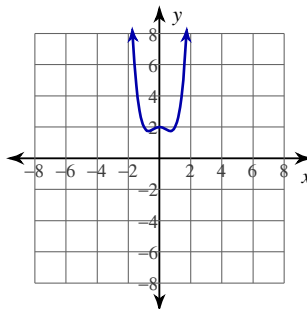
- 35)  $\pm 1, \pm \frac{1}{3}$       36)  $\left\{-2, -1, -\frac{1}{2}\right\}$       37)  $\left\{-1, -\frac{1}{5}, 1\right\}$       38)  $\{3\}$

- 39)  $\left\{\frac{1}{2}, -1 \text{ mult. } 2\right\}$       40)  $\left\{1 \text{ mult. } 2, -\frac{1}{2}\right\}$       41)  $\left\{-\frac{1}{5}\right\}$

- 42)      43)

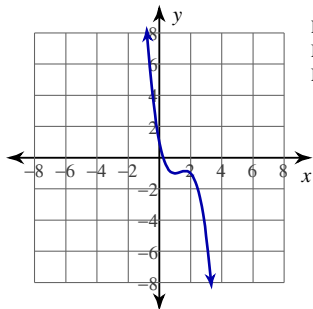


Real Zeros: 2.2  
 Minima: (1.3, -2.2)  
 Maxima: (0, -1)



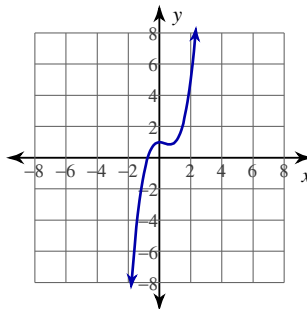
Real Zeros: None  
 Minima: (-0.7, 1.8)  
 Maxima: (0, 2)

44)



Real Zeros: 0.2  
 Minima: (1, -1)  
 Maxima: (1.7, -0.9)

45)



Real Zeros: -0.8  
 Minima: (0.7, 0.9)  
 Maxima: (0, 1)

46) D

47) A

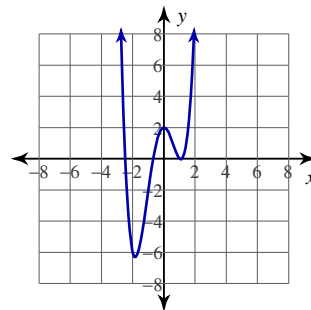
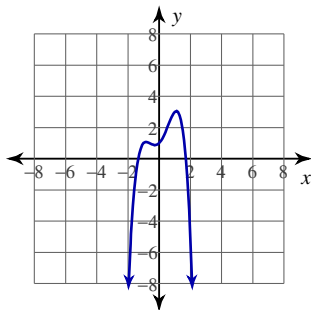
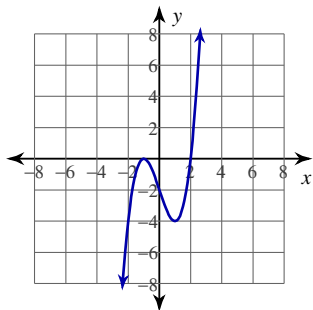
48) A

49) C

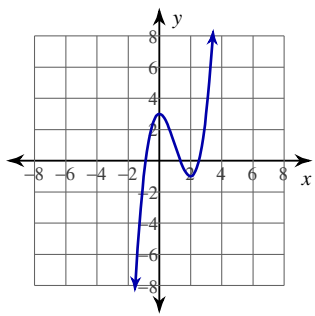
50)

51)

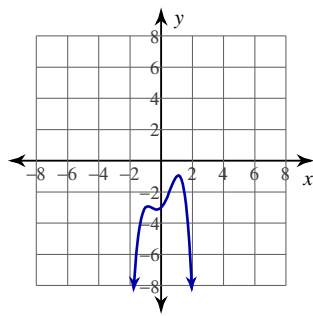
52)



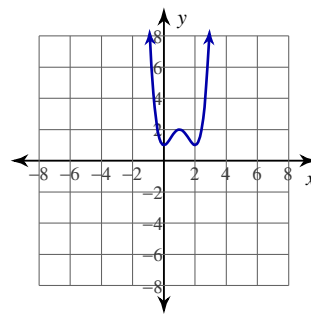
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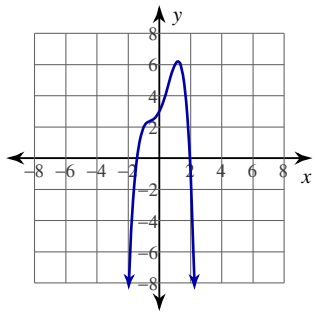
54)



55)



56)



57)

