

# Website

## Chapter 5 Test Review

Classify each polynomial by degree and by number of terms. Simplify first if necessary.

41.  $a^2 + a^3 - 4a^4$

42. 7

43.  $2x(3x)$

44.  $(2a - 5)(a^2 - 1)$

45.  $(-8d^3 - 7) + (-d^3 - 6)$

46.  $b(b - 3)^2$

(41)  $-4a^4 + a^3 + a^2$   
~~trinominal~~  
quartic

(42) 7  
constant monomial

(43)  $6x^2$   
quadratic monomial

(44)  $2a^3 - 2a - 5a^2 + 5$   
 $2a^3 - 5a^2 - 2a + 5$   
Cubic poly w/4 terms

(45)  $-9d^3 - 13$   
cubic binomial

(46)  $b(b^2 - 6b + 9)$   
 $b^3 - 6b^2 + 9b$   
cubic trinomial

Determine the end behavior of the graph of each polynomial function.

See Problem

20.  $y = -7x^4 + 8x^2 - x$

21.  $y = -3x - 6x^2 - 1$

22.  $y = 1 - 4x - 6x^3 - 15x^6$

23.  $y = 8x^{11} - 2x^9 + 3x^6 - 4$

24.  $y = -x^5 - 15x^7 - 4x^9$

25.  $y = -3 - 6x^5 - 9x^8$

(20)  $x \rightarrow \infty, y \rightarrow -\infty$   
 $x \rightarrow -\infty, y \rightarrow \infty$

(21)  $x \rightarrow \infty, y \rightarrow \infty$   
 $x \rightarrow -\infty, y \rightarrow \infty$

(22)  $x \rightarrow \infty, y \rightarrow -\infty$   
 $x \rightarrow -\infty, y \rightarrow -\infty$

(23)  $x \rightarrow \infty, y \rightarrow \infty$   
 $x \rightarrow -\infty, y \rightarrow -\infty$

(24)  $x \rightarrow \infty, y \rightarrow -\infty$   
 $x \rightarrow -\infty, y \rightarrow \infty$

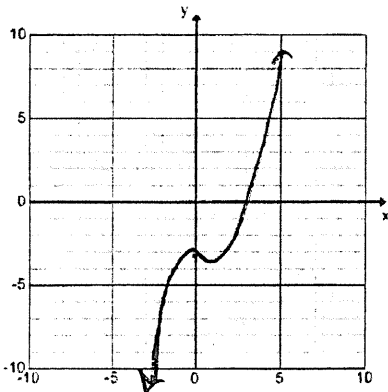
(25)  $x \rightarrow \infty, y \rightarrow \infty$   
 $x \rightarrow -\infty, y \rightarrow -\infty$



Graph each function. Then determine the turning points, end behavior, and the intervals of increasing/decreasing.

32.  $y = 3x^3 - x - 3$

E.B.  
 $x \rightarrow \infty, y \rightarrow \infty$   
 $x \rightarrow -\infty, y \rightarrow -\infty$



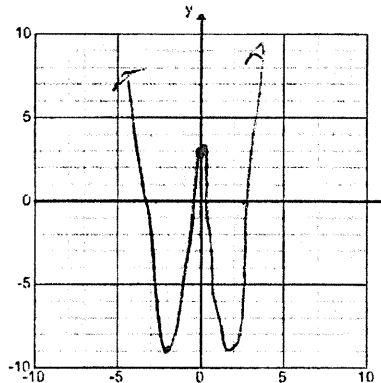
Turning Points:  $(-0.43, -2.8)$   
 $(0.21, -3.18)$

Increasing:  $x < -0.43, x > 0.21$   
Decreasing:  $-0.43 < x < 0.21$

Graph each function. Then determine the turning points, end behavior, and the intervals of increasing/decreasing.

26.  $y = x^4 - 7x^2 + 3$

E.B.  $x \rightarrow \infty, y \rightarrow \infty$   
 $x \rightarrow -\infty, y \rightarrow \infty$



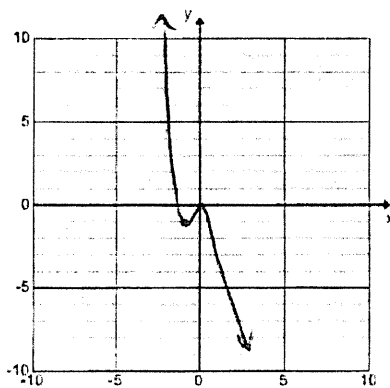
Turning Points:  $(-1.91, -9.22), (1.91, -9.22)$   
 $(0, 3)$

Increasing:  $-1.91 < x < 0, x > 1.91$

Decreasing:  $x < -1.91, 0 < x < 1.91$

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

E.B.  
 $x \rightarrow \infty, y \rightarrow -\infty$   
 $x \rightarrow -\infty, y \rightarrow \infty$



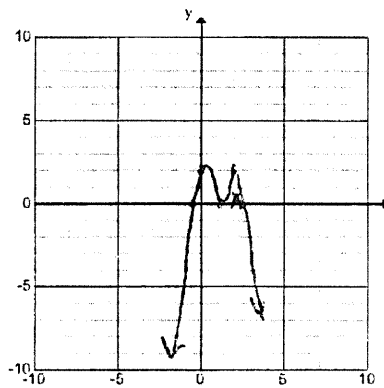
Turning Points:  $(-1, -1), (0, 0)$

Increasing:  $-1 < x < 0$

Decreasing:  $x < -1, x > 0$

$y = -2x^4 + 8x^3 - 8x^2 + 2$

E.B.  $x \rightarrow \infty, y \rightarrow -\infty$   
 $x \rightarrow -\infty, y \rightarrow -\infty$



Turning Points:  $(0, 2), (1, 0), (2, 2)$

Increasing:  $x < 0, 1 < x < 2$

Decreasing:  $0 < x < 1, x > 2$



Write each polynomial in factored form.

7.  $x^3 + 7x^2 + 10x$

8.  $x^3 - 7x^2 - 18x$

9.  $x^3 - 4x^2 - 21x$

10.  $x^3 - 36x$

11.  $x^3 + 8x^2 + 16x$

12.  $9x^3 + 6x^2 - 3x$

(7)  $x(x^2 + 7x + 10)$   
 $x(x+5)(x+2)$

(8)  $x(x^2 - 7x - 18)$   
 $x(x+2)(x-9)$

(9)  $x(x^2 - 4x - 21)$   
 $x(x-7)(x+3)$

(10)  $x(x^2 - 36)$   
 $x(x-6)(x+6)$

(11)  $x(x^2 + 8x + 16)$   
 $x(x+4)(x+4)$   
 $x(x+4)^2$

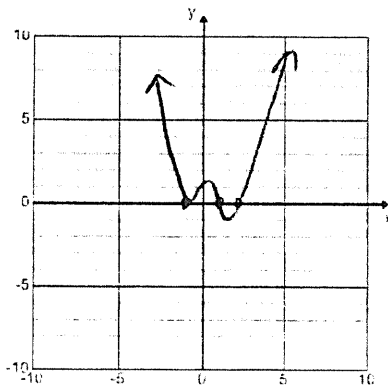
(12)  $3x(3x^2 + 2x - 1)$   

$$\begin{array}{r} -3 \\ 3 \times -1 \\ \hline 2 \end{array}$$
 $3x(3x^2 + 3x - x - 1)$   
 $3x(3x(x+1) - 1(x+1))$   
 $3x(3x-1)(x+1)$

State the zeroes, the multiplicity of each zero, then graph.

$y = (x+1)^2(x-1)(x-2)$

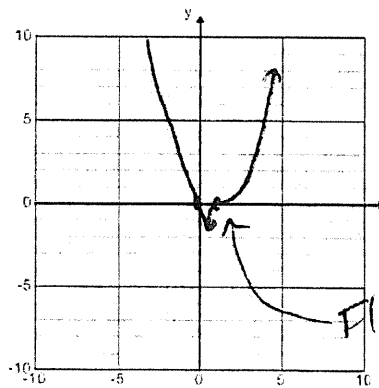
$(-1, 0)$  mult. of 2,  $(1, 0)$ ,  $(2, 0)$



Deg = 4

$y = x(x-1)^3$

$(0, 0)$ ,  $(1, 0)$  mult. of 3



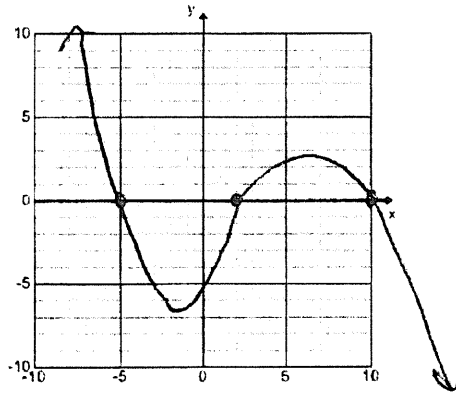
Deg = 4



State the zeroes, the multiplicity of each zero, then graph.

$$y = -(x-2)(x+5)(x-10)$$

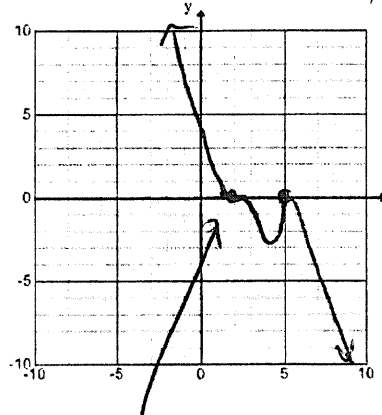
$$(2,0), (-5,0), (10,0)$$



$$\text{Deg} = 3 \text{ (negative)}$$

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

$$(2,0) \text{ mult. of } 3, (5,0) \text{ mult. of } 2$$



Flattens out

$$\text{neg} = 5$$

Write a polynomial function in standard form with the given zeros.

24.  $x = 0, 4, \frac{1}{2}$

$$y = x(x-4)(x+\frac{1}{2})$$

$$y = x(x^2 - \frac{7}{2}x - 2)$$

$$y = x^3 - \frac{7}{2}x^2 - 2x$$

25.  $x = 0, 0, 2, 3$

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

$$y = x^2(x^2 - 5x + 6)$$

$$y = x^4 - 5x^3 + 6x^2$$

26.  $x = -1, -2, -3, -4$

$$y = (x+1)(x+2)(x+3)(x+4)$$

$$y = (x^2 + 3x + 2)(x^2 + 7x + 12)$$

$$y = x^4 + 7x^3 + 12x^2 + 3x^3 + 12x^2 + 36x + 2x^2 + 14x + 24$$

$$y = x^4 + 10x^3 + 26x^2 + 50x + 24$$

