

Final Exam Review #2 (Chapters 9-10)

Date

Period

EXTRA CREDIT - Must clearly show work. Get correct answers.**2 HW grades for odds and 2 HW grades for evens.****CHAPTER 9.**

Simplify each radical.

1) $\sqrt{128}$ $\sqrt{64} \sqrt{2} =$
 $8\sqrt{2}$

FIND THE LARGEST PERFECT SQUARE AND THE SMALLEST PRIME NUMBER OR COMPOSITE # THAT DOES NOT HAVE A PERFECT SQUARE

2) $\sqrt{72} = \sqrt{36} \sqrt{2} =$
 $6\sqrt{2}$

3) $\sqrt{144}$
 12

4) $\sqrt{400}$
 20

5) $\sqrt{24}$ $\sqrt{4} \sqrt{6} =$
 $2\sqrt{6}$

6) $\sqrt{320}$ $\sqrt{64} \sqrt{5} =$
 $8\sqrt{5}$

7) $\sqrt{90}$ $\sqrt{9} \sqrt{10} =$
 $3\sqrt{10}$

8) $\sqrt{810}$ $\sqrt{81} \sqrt{10} =$
 $9\sqrt{10}$

9) $\sqrt{243}$ $\sqrt{81} \sqrt{3} =$
 $9\sqrt{3}$

10) $\sqrt{180}$ $\sqrt{36} \sqrt{5} =$
 $6\sqrt{5}$

PERFECT SQUARES

4, (2.2)
 9, (3.3)
 16, (4.4)
 25, (5.5)
 36, (6.6)
 49, (7.7)
 64, (8.8)
 81, (9.9)
 100 etc

PRIME NUMBERS

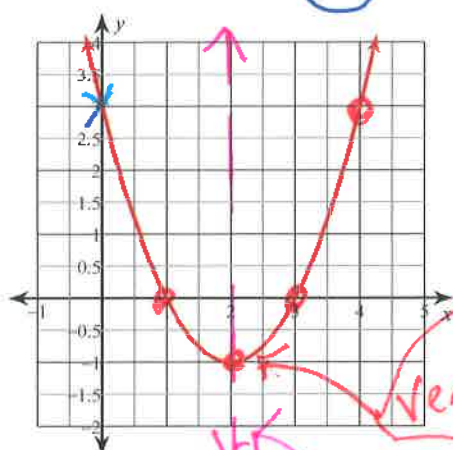
2, 3, 5, 7, 11,
 13, 17, 19, 21
 etc

COMPOSITE NUMBERS WITHOUT A PERFECT SQUARE

6, 10, 14, 15
 etc

Sketch the graph of each function. Clearly mark 5 points. Label the axis of symmetry, vertex, and y-intercept.

11) $y = x^2 - 4x + 3$ $A=1$ $B=-4$ $C=3$
 $y_{int} (0,3)$

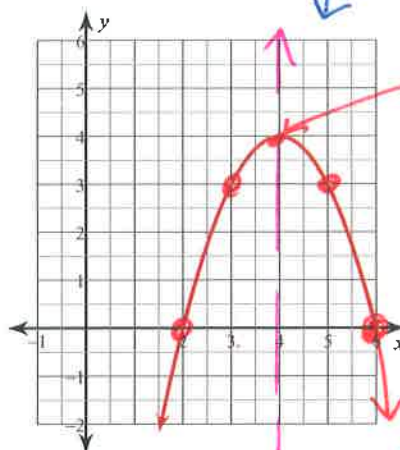


AS $x = \frac{-B}{2A} = \frac{4}{2(1)} \Rightarrow x = 2$

Vertex $(2, -1)$

$y = (2)^2 - 4(2) + 3 = -1$

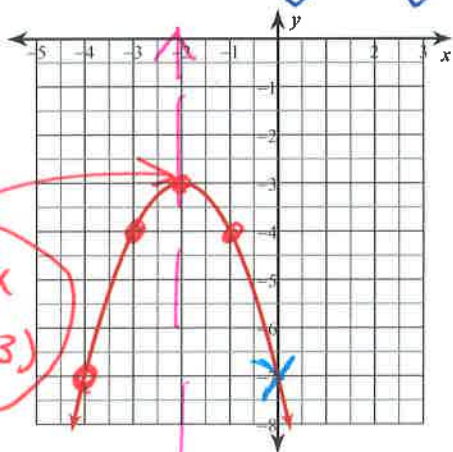
12) $y = -x^2 + 8x - 12$ $A=-1$ $B=8$ $C=-12$



Vertex $(4, 4)$

AS: $x = 4$

13) $y = -x^2 - 4x - 7$ $A=-1$ $B=-4$ $C=-7$



Vertex $(-2, -3)$

AS $x = -2$

AS: $x = \frac{-B}{2A} = \frac{4}{2(-1)} \Rightarrow x = -2$

Vertex $(-2, -3)$

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

x	y
-4	-7
-3	-4
-2	-3
-1	-4
0	-7

"A" tells the shape
 $+A \rightarrow$ opens up $\uparrow$
 $-A \rightarrow$ opens down $\downarrow$

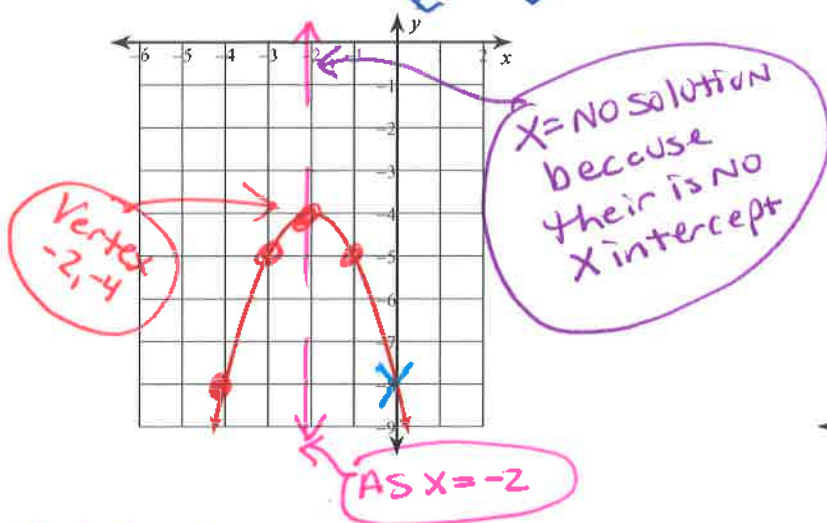
"C" is the y-intercept $(0, C)$

Axis of Symmetry
 $x = \frac{-B}{2A}$

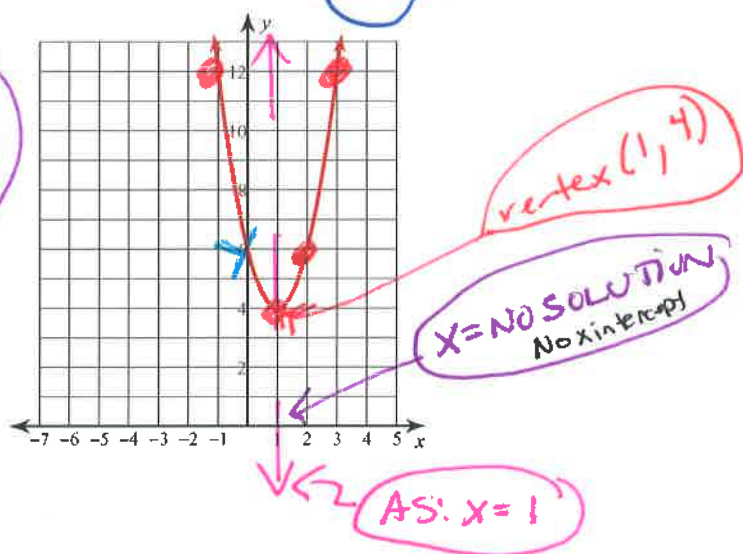
Create a table of 5 values with the Vertex in the middle

Solve Quadratic Function by graphing. Sketch the graph of each function. Clearly mark 5 points. Determine solutions by marking with an "X" or stating "No Solution."

14) $y = -x^2 - 4x - 8$ $A = -1$ $B = -4$ $C = -8$

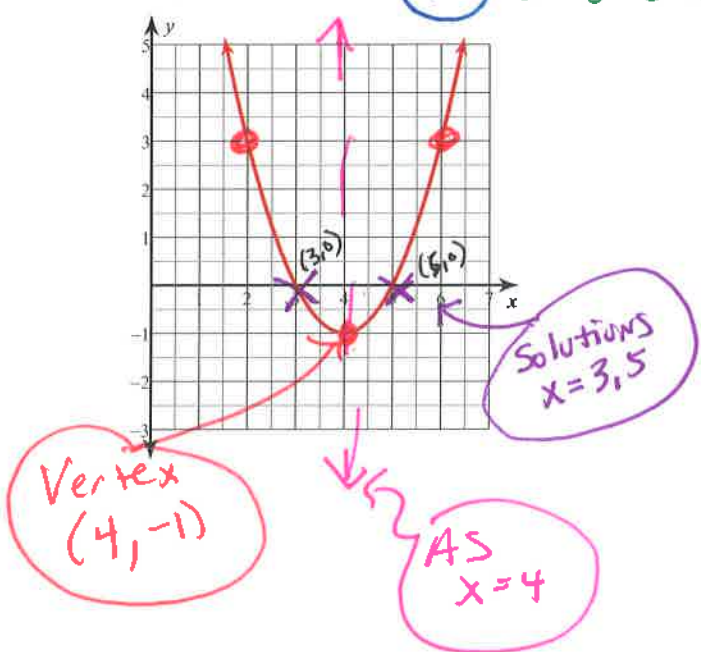


15) $y = 2x^2 - 4x + 6$ $A = 2$ $B = -4$ $C = 6$

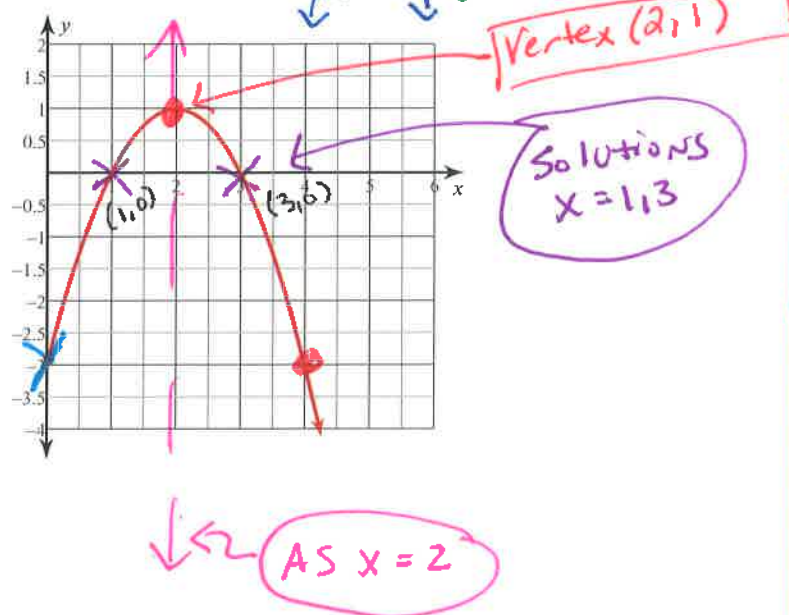


A tells shape
 $\uparrow +A \uparrow$
 $\downarrow -A \downarrow$

16) $y = x^2 - 8x + 15$ $A = 1$ $B = -8$ $C = 15$



17) $y = -x^2 + 4x - 3$ $A = -1$ $B = 4$ $C = -3$



The X INTERCEPTS ARE THE SOLUTIONS
 TO A QUADRATIC EQUATION

Solve each equation with the quadratic formula. Round solutions to 2 decimals.

18) $4a^2 + 12a - 16 = 0$ $A=4$ $B=12$ $C=-16$ 19) $b^2 - 11b + 28 = 0$ $A=1$ $B=-11$ $C=28$

$$X = \frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$$

$$X = \frac{-12 \pm \sqrt{144 - 4(4)(-16)}}{2(4)}$$

$$X = \frac{-12 \pm \sqrt{400}}{8}$$

$$X = \frac{-12 \pm 20}{8}$$

$$X = \frac{-12 + 20}{8}$$

$$X = 1$$

$$X = \frac{-12 - 20}{8}$$

$$X = -4$$

$$X = \frac{11 \pm \sqrt{121 - 4(1)(28)}}{2(1)}$$

$$X = 4.7$$

20) $-2m^2 - 6m + 140 = 0$ $A=-2$ $B=-6$ $C=140$

$\{-10, 7\}$

$$X = \frac{6 \pm \sqrt{3 \cdot 6 - 4(-2)(140)}}{2(-2)}$$

$$X = \frac{6 \pm \sqrt{1156}}{-4}$$

$$X = \frac{6 \pm 34}{-4}$$

$$X = \frac{6 + 34}{-4}$$

$$X = -10$$

$$X = \frac{6 - 34}{-4}$$

$$X = 7$$

Check BOTH SOLUTIONS IN THE ORIGINAL EQUATION

C: $-2(-10)^2 - 6(-10) + 140 = 0$
 $-200 + 60 + 140 = 0$
 $0 = 0 \checkmark$

C: $-2(7)^2 - 6(7) + 140 = 0$
 $-98 - 42 + 140 = 0$
 $0 = 0 \checkmark$

21) $12v^2 - v + 1 = 0$ $A=12$ $B=-1$ $C=1$ 22) $7n^2 + 8 = 0$ $A=7$ $B=0$ $C=8$

$$X = \frac{1 \pm \sqrt{1 - 4(12)(1)}}{2(12)}$$

$$X = \frac{1 \pm \sqrt{-47}}{24}$$

Negative

$$X = \text{No Solution}$$

$$X = \frac{0 \pm \sqrt{0 - 4(7)(8)}}{2(7)}$$

$$X = \frac{0 \pm \sqrt{-224}}{14}$$

Negative

$$X = \text{No Solution}$$

23) $x^2 - 2x + 1 = 0$ $A=1$ $B=-2$ $C=1$

$$X = \frac{2 \pm \sqrt{4 - 4(1)(1)}}{2(1)}$$

$$X = \frac{2 \pm \sqrt{0}}{2}$$

$$X = \frac{2}{2}$$

$$X = 1$$

24) $2n^2 + 4n + 2 = 0$ $A=2$ $B=4$ $C=2$

$\{-1\}$

$$X = \frac{-4 \pm \sqrt{16 - 4(2)(2)}}{2(2)}$$

$$X = \frac{-4 \pm \sqrt{0}}{4}$$

$$X = \frac{-4}{4}$$

$$X = -1$$

CHAPTER 10. Name each polynomial by degree and number of terms.

25) 1 — 1 TERM
Degree = 0
constant monomial

27) $-8x - 10$ — 2 TERMS
Degree = 1
linear binomial

29) $4m^2 - 6m - 8$ — 3 TERMS
Degree = 2
quadratic trinomial

31) $10p^2 - 6p$
quadratic binomial

33) $5n$
linear monomial

26) $-5b^3 - b^2 + 8b$
cubic trinomial

28) $10n^2 - 4$
quadratic binomial

30) $9b^3$ — Degree = 3
cubic monomial

32) $10n^3 - 4$
cubic binomial

34) $-7x^2$
quadratic monomial

TERMS ARE
SEPERATED BY
+, - SIGNS

# TERMS	NAME
1	monomial
2	binomial
3	trinomial

DEGREE IS THE
HIGHEST EXPONENT

DEGREE	NAME
0	Constant
1	linear
2	QUADRATIC
3	CUBIC

Simplify each sum. Write in standard form.

35) $(5 - 5p^2 + p) + (-5p - 4p^2 + 1)$
 $-9p^2 - 4p + 6$

37) $(-3 + 3x^3 + x) + (5x + 2 + 4x^3)$
 $7x^3 + 6x - 1$

36) $(4m^3 - 4 - 3m) + (5m^3 - m - 2m^2)$
 $9m^3 - 2m^2 - 4m - 4$

38) $(-3n + 2n^2 + 3n^3) + (n^3 + n^2 + 3n)$
 $4n^3 + 3n^2$

ADD
COMBINE
LIKE
TERMS

Simplify each difference. Write in standard form.

39) $(1 - a + 3a^2) - (2a^2 + 5 - 2a^3)$
 $2a^3 + a^2 - a - 4$

41) $(-n^3 + 2n + 4) - (-1 - 3n^3 + n)$
 $2n^3 + n + 5$

40) $(x - 5x^2 - 3) - (x + x^2 - 2x^3)$
 $2x^3 - 6x^2 - 3$

42) $(5 + x - x^2) - (x + 5x^2 + 5)$
 $-6x^2$

SUBTRACT
① Rewrite + MULT 2ND POLYNOMIAL BY -1
② Combine Like Terms

Find each product. Write in standard form.

43) $4(-3b + 5) = 4(-3b) + 4(5)$
 $-12b + 20$

45) $-2r(-7r + 7)$
 $14r^2 - 14r$

47) $(4k + 3)(4k + 3) = 4k(4k) + 4k(3) + 3(4k) + 3(3)$
 $16k^2 + 24k + 9$

49) $(8b - 2)(6b + 7)$
 $48b^2 + 44b - 14$

51) $(4r - 3)(4r - 4) = 4r(4r) + 4r(-4) - 3(4r) - 3(-4)$
 $16r^2 - 16r - 12r + 12$
 $16r^2 - 28r + 12$

Distribute

44) $5x(5x - 8) = 5x(5x) + 5x(-8)$
 $25x^2 - 40x$

46) $-2(4x - 5)$
 $-8x + 10$

48) $(2k + 2)(2k + 3) = 2k(2k) + 2k(3) + 2(2k) + 2(3)$
 $4k^2 + 10k + 6$

50) $(3a - 4)(8a + 5)$
 $24a^2 - 17a - 20$

52) $(2n - 8)(6n - 6)$
 $12n^2 - 60n + 48$

Find each product. Write in standard form.

53) $(7k + 8)(7k - 8) = 7k(7k) + 7k(-8) + 8(7k) + 8(-8)$
 $49k^2 - 64$

54) $(4r - 3)(4r + 3)$
 $16r^2 - 9$

TIP
Expand

55) $(4x - 2)^2(4x - 2) = 4x(4x) + 4x(-2) - 2(4x) - 2(-2)$
 $16x^2 - 16x + 4$

56) $(6r - 5)^2$
 $36r^2 - 60r + 25$

EXPAND

57) $(4n + 4)^2(4n + 4) = 4n(4n) + 4n(4) + 4(4n) + 4(4)$
 $16n^2 + 32n + 16$

58) $(2v + 2)^2$
 $4v^2 + 8v + 4$