

Final Exam Review #2 (Chapters 9-10)

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.

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

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

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

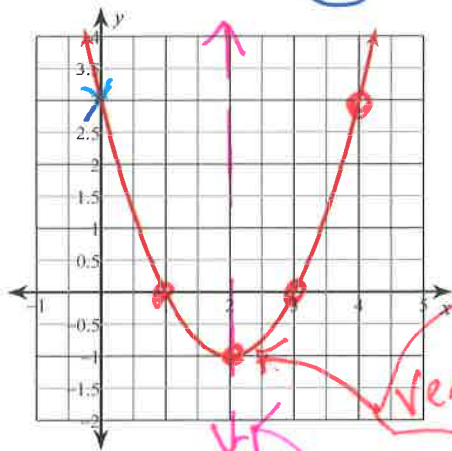
PERFECT SQUARES	
4	(2.2)
9	(3.3)
16	(4.4)
25	(5.5)
36	(6.6)
49	(7.7)
64	(8.8)
81	(9.9)
100 etc	

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

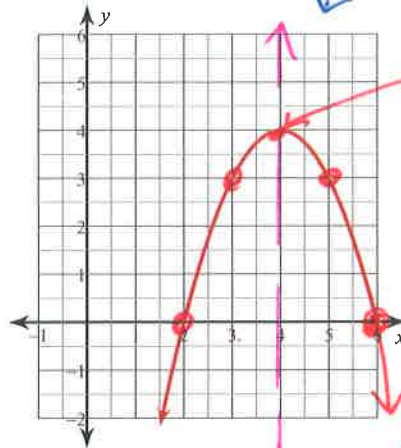


AS $x = \frac{-B}{2A} = \frac{4}{2(1)} \quad \boxed{x=2}$

Vertex $(2, -1)$

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

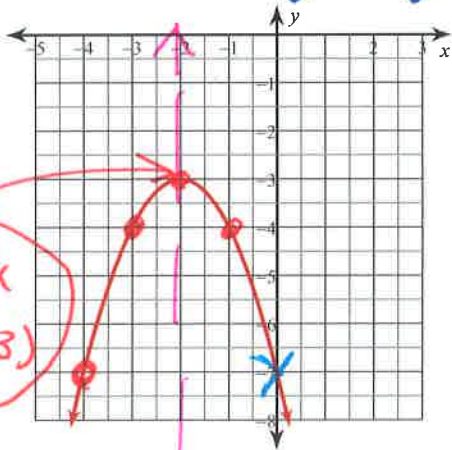
12) $y = -x^2 + 8x - 12$ $A=-1$ $B=8$ $C=-12$



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

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

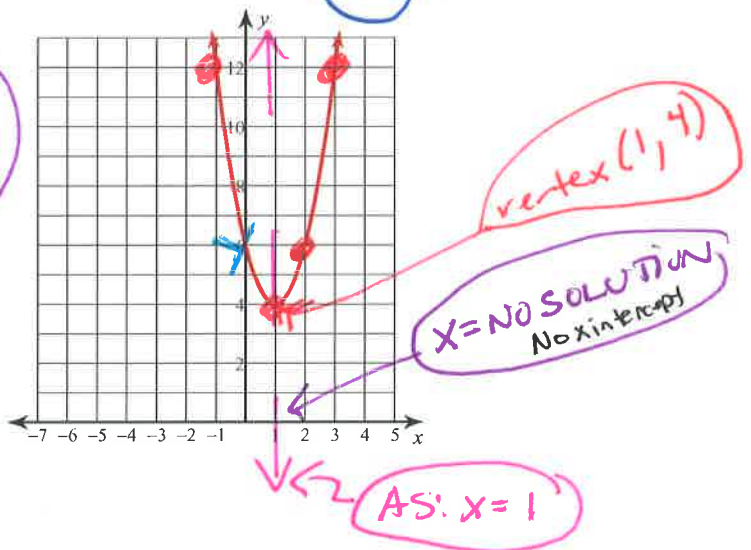
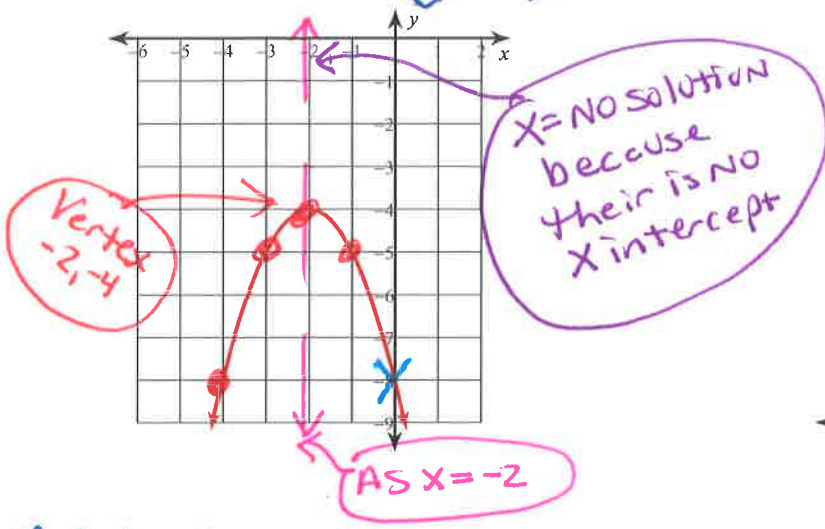
$x = \frac{-B}{2A}$

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

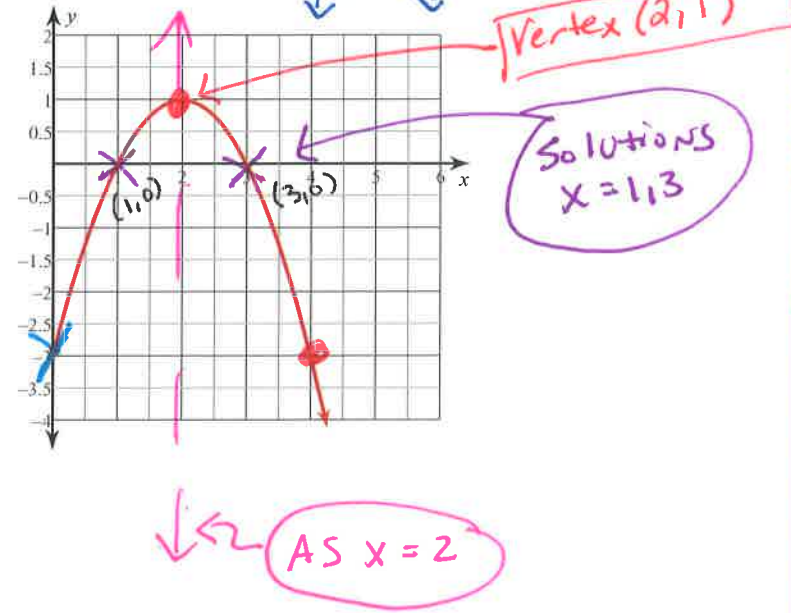
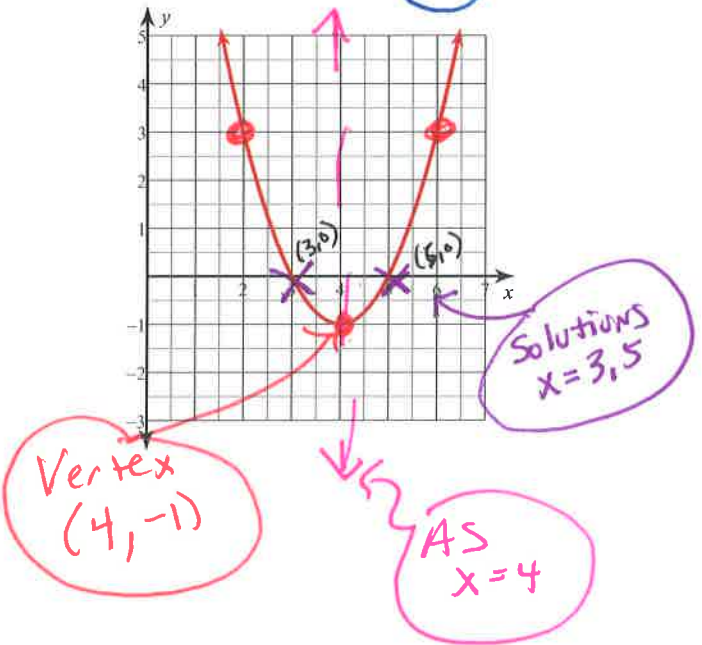
15) $y = 2x^2 - 4x + 6$ $A = 2$ $B = -4$ $C = 6$



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) $b^2 - 11b + 28 = 0$ $A=1$ $B=-11$ $C=28$

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

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

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

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

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

$$X = 1 \quad X = -4$$

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

$$X = 4.7$$

20) $-2m^2 - 6m + 140 = 0$ $A=-2$ $B=-6$ $C=140$
 {-10, 7}

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

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

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

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

$$X = -10 \quad X = 7$$

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) $12v^2 - v + 1 = 0$ $A=12$ $B=-1$ $C=1$

no solution

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

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

Negative

$X = \text{NO SOLUTION}$

22) $7n^2 + 8 = 0$ $A=7$ $B=0$ $C=8$

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) $5n^3$
 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) $(5 - 5p^2 + p) + (-5p - 4p^2 + 1)$
 $-9p^2 - 4p + 6$

ADD COMBINE LIKE TERMS

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

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

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

Simplify each difference. Write in standard form.

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

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

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

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

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

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

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