

Chapter 4 PRACTICE TEST

Date

Period

STANDARD FORM

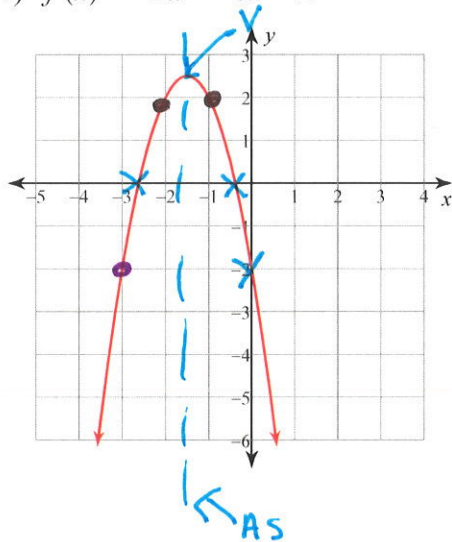
Graph and label the parts of the quadratic function.

Round to 2 decimals.

Create a table of 5 values with the vertex the middle point.

What is the vertex? $(-1.5, 2.5)$ (Label with a V)What is the Axis of Symmetry? $x = -1.5$ (Label with A.S.)What is the Y-intercept as an ordered pair? $(0, -2)$ (Label with a Y)Find the Solutions: $x = -2.62, -0.38$ (Label with X's)

1) $f(x) = -2x^2 - 6x - 2$



x	y
-3	-2
-2	2
-1.5	2.5
-1	2
0	-2

✓

VERTEX FORM

Graph and label the parts of the quadratic function.

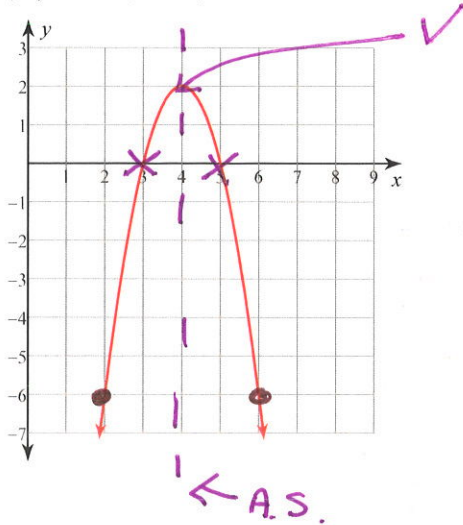
Create a table of 5 values with the vertex the middle point.

What is the vertex? (4, 2) (Label with a V)

What is the Axis of Symmetry? X = 4 (Label with A.S.)

Find the Solutions: X = 3, 5 (Label with X's)

2) $y = -2(x - 4)^2 + 2$



x	y
2	-6
3	0
4	2
5	0
6	-6

INTERCEPT FORM:

Graph and label the parts of the quadratic function.

Create a table of 5 values with the vertex the middle point.

Find the Solutions: X = -2, 4 (Label with X's)

What is the vertex? (1, -9) (Label with a V)

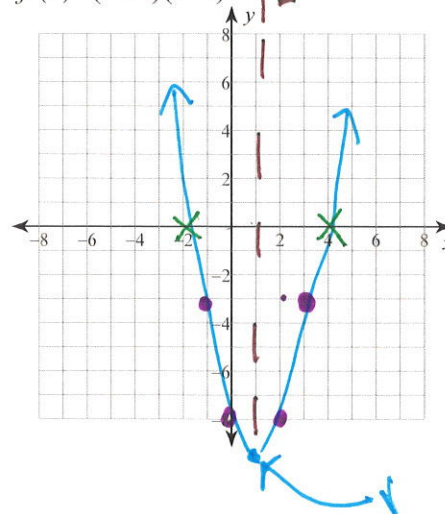
What is the Axis of Symmetry? X = 1 (Label with A.S.)

3) skip

skip

x	y
-1	-5
0	-8
1	-9
2	-8
3	-5

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

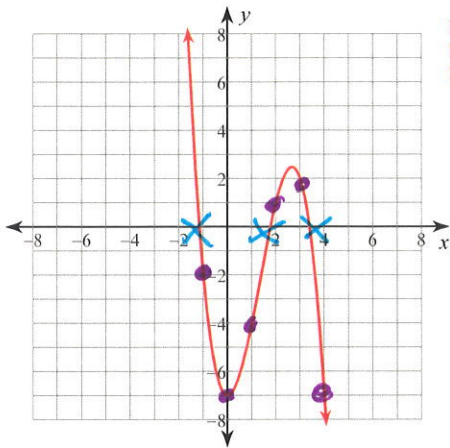


HIGHER ORDER FUNCTIONS

a) Sketch the graph of each function to show clearly show the shape the function. Create a table of ALL points that can fit on the coordinate grid provided.

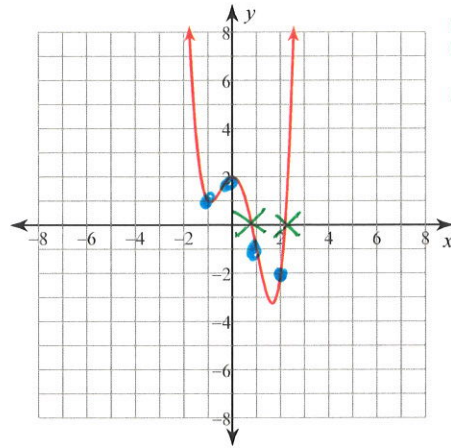
b) Find the Solutions: _____ (Label with X's). Round to 1 decimal place.

5) $f(x) = -x^3 + 4x^2 - 7$



Real Zeros: -1.2, 1.8, 3.4
Minima: (0, -7)
Maxima: (2.7, 2.5)

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



Real Zeros: 0.8, 2.2
Minima: (-0.9, 1)
(1.7, -3.2)
Maxima: (0, 2)

X	Y
-1	-2
0	-7
1	-4
2	1
3	2
4	-7

X	Y
-1	1
0	2
1	-1
2	-2

$$X = -1.2, 1.8, 3.4$$

$$X = 0.8, 2.2$$

Solve each equation by taking square roots. Leave answers in SIMPLE RAICAL FORM.

$$7) r^2 = 64$$

$$R = \pm 8$$

$$8) x^2 = -12$$

$$X = \pm i\sqrt{4}\sqrt{3}$$

$$X = \pm 2i\sqrt{3}$$

$$9) b^2 = -49$$

$$B = \pm 7i$$

$$10) v^2 - 10 = 70$$

$$\frac{+10 \quad +10}{v^2 = 80}$$

$$V = \pm \sqrt{16}\sqrt{5}$$

$$V = \pm 4\sqrt{5}$$

$$11) 10m^2 = -40$$

$$\frac{10}{10} \frac{-40}{10} \Rightarrow m^2 = -4$$

$$m = \pm 2i$$

$$12) 10m^2 + 2 = 812$$

$$\frac{-2 \quad -2}{10m^2 = 810}$$

$$\frac{10}{10} \frac{810}{10} \Rightarrow m^2 = 81$$

$$m = \pm 9$$

$$13) 3r^2 + 3 = 228$$

$$\frac{-3 \quad -3}{3r^2 = 225}$$

$$\frac{3}{3} \frac{225}{3} \Rightarrow r^2 = 75$$

$$R = \pm \sqrt{25}\sqrt{3}$$

$$R = \pm 5\sqrt{3}$$

$$14) -4 - 8k^2 = -436$$

$$\frac{+4 \quad +4}{-8k^2 = -432}$$

$$\frac{-8}{-8} \frac{-432}{-8} \Rightarrow k^2 = 54$$

$$K = \pm \sqrt{9}\sqrt{6}$$

$$K = \pm 3\sqrt{6}$$

Solve each equation with the quadratic formula. Leave solutions in SIMPLE RAICAL FORM

15) $n^2 - 2n + 4 = 0$

$A = 1 \quad B = -2 \quad C = 4$

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

$$X = \frac{2 \pm \sqrt{-12}}{2}$$

$$X = \frac{2 \pm i\sqrt{12}}{2}$$

$$X = \frac{2 \pm 2i\sqrt{3}}{2}$$

$$X = 1 \pm i\sqrt{3}$$

16) $-4x^2 + 8x - 12 = 0$

$A = -4 \quad B = 8 \quad C = -12$

$$X = \frac{-8 \pm \sqrt{64 - 4(-4)(-12)}}{2(-4)}$$

$$X = \frac{-8 \pm \sqrt{-128}}{-8}$$

$$X = \frac{-8 \pm i\sqrt{64} \sqrt{2}}{-8}$$

$$X = \frac{-8 \pm 8i\sqrt{2}}{-8}$$

$$X = 1 \pm i\sqrt{2}$$

Q.E. $Ax^2 + Bx + C = 0$

Q.F.

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

Solve each equation with the quadratic formula. ROUND TO 2 DECIMALS.

17) $3x^2 - 3x - 36 = 0$

$A=3$ $B=-3$ $C=-36$

$$X = \frac{3 \pm \sqrt{9 - 4(3)(-36)}}{2(3)}$$

$$X = \frac{3 \pm \sqrt{441}}{6}$$

$$X = \frac{3 \pm 21}{6}$$

$$X = \frac{3+21}{6}$$

$$\boxed{X=4}$$

$$X = \frac{3-21}{6}$$

$$\boxed{X=-3}$$

18) $-3n^2 + 7n + 6 = 0$

$A=-3$ $B=7$ $C=6$

$$X = \frac{-7 \pm \sqrt{49 - 4(-3)(6)}}{2(-3)}$$

$$X = \frac{-7 \pm \sqrt{121}}{-6}$$

$$X = \frac{-7 \pm 11}{-6}$$

$$X = \frac{-7+11}{-6}$$

$$X = \frac{-7-11}{-6}$$

$$\boxed{X=-0.67}$$

$$\boxed{X=3}$$

19) $x^2 - 9x - 13 = 0$

$A=1$ $B=-9$ $C=-13$

$$X = \frac{9 \pm \sqrt{81 - 4(1)(-13)}}{2(1)}$$

$$X = \frac{9 \pm \sqrt{133}}{2}$$

$$X = \frac{9 + \sqrt{133}}{2}$$

$$\boxed{X=10.27}$$

$$X = \frac{9 - \sqrt{133}}{2}$$

$$\boxed{X=-1.27}$$

Solve each equation by completing the square. ROUND TO 2 DECIMALS.

20) $r^2 + 8r + 15 = 0$

$$\frac{-15 \quad -15}{R^2 + 8R + 16 = -15 + 16}$$

$$\sqrt{(R+4)^2} = \sqrt{1}$$

$$\frac{R+4 = \pm 1}{-4 \quad -4}$$

$$R = -4 \pm 1$$

$$R = -4 + 1$$

$$\textcircled{R = -3}$$

$$R = -4 - 1$$

$$\textcircled{R = -5}$$

21) $b^2 + 12b - 64 = 0$

$$\frac{+64 \quad +64}{B^2 + 12B + 36 = 64 + 36}$$

$$\sqrt{(B+6)^2} = \sqrt{100}$$

$$\frac{B+6 = \pm 10}{-6 \quad -6}$$

$$B = -6 \pm 10$$

$$B = -6 + 10$$

$$\textcircled{B = 4}$$

$$B = -6 - 10$$

$$\textcircled{B = -16}$$

22) $x^2 - 12x + 20 = 0$

$$\frac{-20 \quad -20}{X^2 - 12X + 36 = -20 + 36}$$

$$\sqrt{(X-6)^2} = \sqrt{16}$$

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

$$X = 6 \pm 4$$

$$X = 6 + 4$$

$$\textcircled{X = 10}$$

$$X = 6 - 4$$

$$\textcircled{X = 2}$$

23) $v^2 - 16v - 36 = 0$

$$\frac{+36 \quad +36}{V^2 - 16V + 64 = 36 + 64}$$

$$\sqrt{(V-8)^2} = \sqrt{100}$$

$$\frac{V-8 = \pm 10}{+8 \quad +8}$$

$$V = 8 \pm 10$$

$$V = 8 + 10$$

$$\textcircled{V = 18}$$

$$V = 8 - 10$$

$$\textcircled{V = -2}$$

Solve each equation by factoring.

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

$$\begin{array}{r} 1 \quad 24 \\ 2 \quad 12 \\ 3 \quad 8 \leftarrow \\ 4 \quad 6 \end{array}$$

$$(x+3)(x+8) = 0$$

$$x+3=0$$

$$x = -3$$

$$x+8=0$$

$$x = -8$$

26) $x^2 - 6x - 16 = 0$

$$\begin{array}{r} 1 \quad 16 \\ 2 \quad 8 \leftarrow \\ 4 \quad 4 \end{array}$$

$$(x-8)(x+2) = 0$$

$$x-8=0$$

$$x = 8$$

$$x+2=0$$

$$x = -2$$

28) $6b^2 - 6b = 0$

$$6b(b-1) = 0$$

$$\cancel{6}b = 0$$

$$\frac{0}{6} = \frac{0}{6}$$

$$b = 0$$

$$\frac{b-1}{+1} = \frac{0}{+1}$$

$$b = 1$$

30) $5n^2 - 20n + 15 = 0$

$$5(n^2 - 4n + 3) = 0$$

$$5(n-3)(n-1) = 0$$

$$n = 1, 3$$

25) $x^2 - 8x + 7 = 0$

$$(x-7)(x-1) = 0$$

$$x-7=0$$

$$x = 7$$

$$x-1=0$$

$$x = 1$$

27) $m^2 - 25 = 0$

$$(m-5)(m+5) = 0$$

$$m-5=0$$

$$m = 5$$

$$m+5=0$$

$$m = -5$$

29) $4r^2 - 64 = 0$

$$4(r^2 - 16) = 0$$

$$4(r+4)(r-4) = 0$$

$$4 = 0$$

no variable

$$r+4=0$$

$$r = -4$$

$$r-4=0$$

$$r = 4$$

31) $2a^2 + 10a + 8 = 0$

$$2(a^2 + 5a + 4) = 0$$

$$2(a+4)(a+1) = 0$$

$$a = -4, -1$$

CHOOSING THE EASIEST METHOD TO SOLVE QUADRATIC FUNCTIONS

You have learned 5 methods. Use each of the 5 methods ONCE to solve the 5 given quadratic functions.

1) Solve by Graphing - sketch a clear graph. Plot the vertex and the x-intercepts. Then give the solutions

2) Solve by taking square roots.

3) Solve with the Quadratic Formula

4) Solve by Completing the Square

5) Solve by Factoring

32) $4b^2 + 10 = 14$

← NO "B" TERM
TAKE SQUARE
ROOT

$$\begin{array}{r} -10 \quad -10 \\ \hline 4b^2 + 10 = 14 \\ \hline \end{array}$$

$$\frac{4b^2}{4} = \frac{4}{4}$$

$$\sqrt{b^2} = \sqrt{1}$$

$$\boxed{b = \pm 1}$$

33) $r^2 + 2r - 15 = 0$

EASY TO FACTOR

$$(R + 5)(R - 3) = 0$$

$$\begin{array}{l} R + 5 = 0 \\ \boxed{R = -5} \end{array}$$

$$\begin{array}{l} R - 3 = 0 \\ \boxed{R = 3} \end{array}$$

34) $k^2 + 12k - 748 = 0$

← $A=1$ → COMPLETE THE SQUARE

$$\begin{array}{r} +748 \quad +748 \\ \hline k^2 + 12k - 748 = 0 \\ \hline \end{array}$$

$$k^2 + 12k + \underline{36} = 748 + 36$$

$$\sqrt{(k+6)^2} = \sqrt{784}$$

$$\begin{array}{r} k+6 = \pm 28 \\ -6 \quad -6 \\ \hline \end{array}$$

$$k = -6 \pm 28$$

$$k = -6 + 28$$

$$\boxed{k = 22}$$

$$k = -6 - 28$$

$$\boxed{k = -34}$$

35) $4x^2 + 8x - 21 = 0$ ← Too BIG TO GRAPH -

$A = 4$
 $B = 8$
 $C = -21$

USE QUAD.
FORMULA

$$X = \frac{-8 \pm \sqrt{64 - 4(4)(-21)}}{2(4)}$$

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

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

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

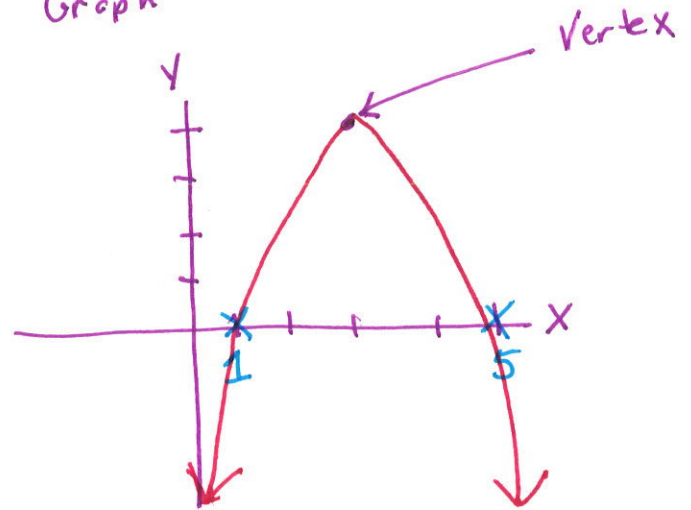
$$X = 1.5$$

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

$$X = -3.5$$

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

Graph



solutions: $x=1,5$