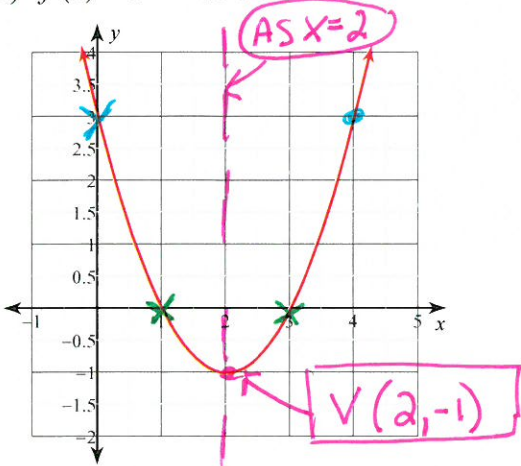


Chapter 5 Practice Test

Solve by Graphing. Clearly graph each function marking 5 points; the vertex (V), the axis of symmetry (AS); the x-intercepts (X).

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

$A=1 \ B=-4 \ C=3$



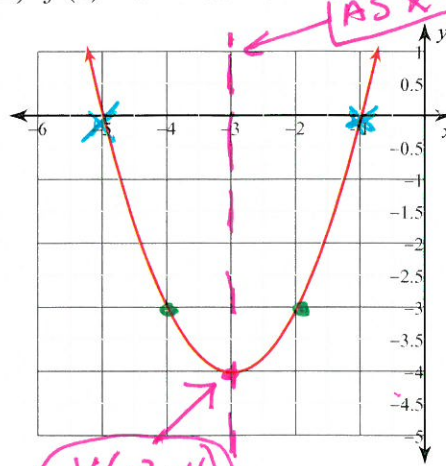
AS  $x = \frac{-B}{2A} = \frac{4}{2(1)} = \underline{\underline{x=2}}$

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

Solutions  $\rightarrow$   $x=1, 3$

2)  $f(x) = x^2 + 6x + 5$

$A=1 \ B=6 \ C=5$



AS  $x = -3$

$V(-3, -4)$

Solutions are the x-intercepts  $(x, 0)$

AS  $x = \frac{-6}{2(1)} = \underline{\underline{x=-3}}$

x	y
-5	0
-4	-3
-3	-4
-2	-3
-1	0

Solutions  $x = -1, -5$

Solve each equation by taking square roots. Leave solutions as improper fractions in simple radical form.

3)  $\sqrt{x^2} = \sqrt{225}$

$x = \{15, -15\}$

Remember When you take  $\sqrt{\quad}$  you get 2 solutions  $(\pm)$

4)  $\sqrt{x^2} = \sqrt{-169}$

$x = \{13i, -13i\}$

5)  $25x^2 - 9 = 27$

$\frac{6}{5}, -\frac{6}{5}$

$25x^2 = 36$   
 $\frac{25}{25}x^2 = \frac{36}{25}$   
 $\sqrt{x^2} = \sqrt{\frac{36}{25}} = \frac{\sqrt{36}}{\sqrt{25}}$

$x = \pm \frac{6}{5}$

6)  $3x^2 - 3 = -51$

$\{4i, -4i\}$

$\frac{3x^2}{3} = \frac{-48}{3}$   
 $\sqrt{x^2} = \sqrt{-16}$

$x = \pm 4i$

Solve each equation by taking square roots. Leave solutions in simple radical form.

7)  $16x^2 - 8 = 392$

$$\begin{array}{r} +8 \quad +8 \\ \hline 16x^2 = 400 \\ \hline 16 \quad 16 \\ \sqrt{x^2} = \sqrt{\frac{400}{16}} = \frac{\sqrt{400}}{\sqrt{16}} \end{array}$$

$$x = \pm \frac{20}{4}$$

$$x = \pm 5$$

8)  $9x^2 - 7 = 29$

$$\begin{array}{r} +7 \quad +7 \\ \hline 9x^2 = 36 \\ \hline 9 \quad 9 \\ \sqrt{x^2} = \sqrt{4} \end{array}$$

$$x = \pm 2$$

9)  $(x-4)^2 = 64$

$$\begin{array}{r} x-4 = \pm 8 \\ +4 \quad +4 \\ \hline x = 4 \pm 8 \end{array}$$

$$x = 4 + 8$$

$$x = 12$$

$$x = 4 - 8$$

$$x = -4$$

ISOLATE THE ( )<sup>2</sup>

10)  $-2(x+3)^2 + 25 = -25$

$$\begin{array}{r} -25 \quad -25 \\ \hline -2(x+3)^2 = -50 \\ \hline -2 \quad -2 \end{array}$$

$$\sqrt{(x+3)^2} = \sqrt{25}$$

$$x+3 = \pm 5$$

$$x = -3 \pm 5$$

$$x = -3 + 5$$

$$x = 2$$

$$x = -3 - 5$$

$$x = -8$$

Simplify. Leave in simple radical form.

11)  $\sqrt{200}$

$$\sqrt{100} \sqrt{2}$$

$$10\sqrt{2}$$

12)  $\sqrt{150}$

$$\sqrt{25} \sqrt{6}$$

$$5\sqrt{6}$$

13)  $\sqrt{360}$

$$\sqrt{36} \sqrt{10}$$

$$6\sqrt{10}$$

14)  $\sqrt{576} = 24$

THIS IS A PERFECT SQUARE

# STEP 1 FOR FACTORING IS TO FACTOR GCF

Factor the GCF first.

$$15) \frac{6x^2}{6x} + \frac{48x}{6x}$$

$$6x(x+8)$$

$$16) \frac{5x^2}{5x} - \frac{45x}{5x}$$

$$5x(x-9)$$

Factor completely.

$$17) x^2 + 16x + 60$$

$$(x+6)(x+10)$$

$$\text{OR } (x+10)(x+6)$$

1	60
2	30
3	10
4	15
6	10

$$18) n^2 - 15n + 50$$

$$(n-5)(n-10)$$

$$\text{OR } (n-10)(n-5)$$

1	50
2	25
5	10

$$19) x^2 - 7x - 30$$

$$(x+3)(x-10)$$

$$\text{OR } (x-10)(x+3)$$

1	30
2	15
3	10
5	6

$$20) x^2 - 2x - 35$$

$$(x+5)(x-7)$$

$$\text{OR } (x-7)(x+5)$$

1	35
5	7

Solve each equation by factoring. CLEARLY SHOW ALL STEPS.

$$21) n^2 + 13n + 40 = 0$$

$$(n+5)(n+8) = 0$$

$$n+5=0$$

$$n=-5$$

$$n+8=0$$

$$n=-8$$

1	40
2	20
4	10
5	8

$$22) x^2 - 16x + 60 = 0$$

$$(x-10)(x-6) = 0$$

$$x-10=0 \quad x-6=0$$

$$x=10$$

$$x=6$$

STEPS

① FACTOR

② SET EACH FACTOR = 0

③ SOLVE FOR X

$$23) x^2 - 2x - 8 = 0$$

$$(x-4)(x+2) = 0$$

$$x-4=0$$

$$x=4$$

$$x+2=0$$

$$x=-2$$

1	8
2	4

Solve each equation with the quadratic formula.

24)  $n^2 + 5n - 50 = 0$   $A=1$   $B=5$   $C=-50$

$$N = \frac{-5 \pm \sqrt{25 - 4(1)(-50)}}{2(1)}$$

$$N = \frac{-5 \pm \sqrt{225}}{2}$$

$$N = \frac{-5 + 15}{2} \quad N = \frac{-5 - 15}{2}$$

$N = 5$        $N = -10$

25)  $n^2 + 8n + 16 = 0$   $A=1$   $B=8$   $C=16$

$$N = \frac{-8 \pm \sqrt{64 - 4(1)(16)}}{2(1)}$$

$$N = \frac{-8 \pm \sqrt{0}}{2}$$

$$N = -8/2$$

$N = -4$

26)  $2x^2 - 10x - 12 = 0$   $A=2$   $B=-10$   $C=-12$       27)  $4v^2 - 64 = 0$   $A=4$   $B=0$   $C=-64$

$$X = \frac{10 \pm \sqrt{100 - 4(2)(-12)}}{2(2)}$$

$$X = \frac{10 \pm \sqrt{196}}{4}$$

$$X = \frac{10 + 14}{4} \quad X = \frac{10 - 14}{4}$$

$X = 6$        $X = -1$

$$X = \frac{0 \pm \sqrt{0 - 4(4)(-64)}}{2(4)}$$

$$X = \frac{\pm \sqrt{1024}}{8}$$

$$X = \pm \frac{32}{8}$$

$X = 4, -4$

Simplify. Leave in a+bi form.

28)  $(7 - 6i) + (3 - 8i)$

$10 - 14i$

COMBINE LIKE TERMS + write a+bi

29)  $(6 + 3i) + (-8 - 3i)$

$-2$

30)  $(-7 + 3i) - (5 - 3i)$

$-7 + 3i - 5 + 3i$   
 $-12 + 6i$

Change to Addition

31)  $(7 - 4i) - (-6 - 4i)$

$7 - 4i + 6 + 4i =$   
 $13$

32)  $(5i)(-7i)$

$5 \cdot -7 i \cdot i$

$-35 i^2 = -35(-1) = +35$

Remember  $i^2 = -1$

33)  $(3i)(-3 + 6i)$

$3i(-3) + (3i)(6i)$

$-9i + 18i^2$

$-9i + 18(-1)$

$-18 - 9i$

34)  $(5 + i)(1 - 3i)$

$(5)(1) + 5(-3i) + (i)(1) + i(-3i)$

$5 - 15i + i - 3i^2 = 3$

$8 - 14i$