

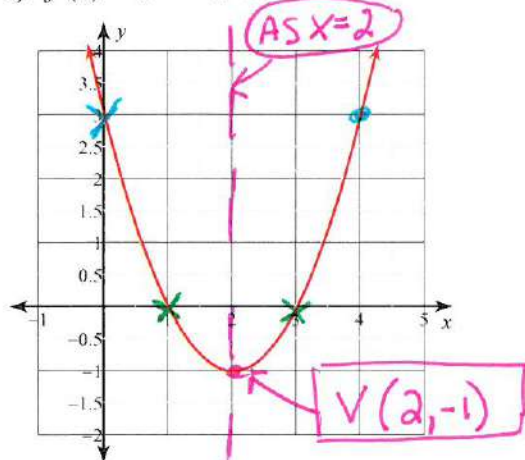
Chapter 5 Practice Test

Date _____ Period _____

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

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

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



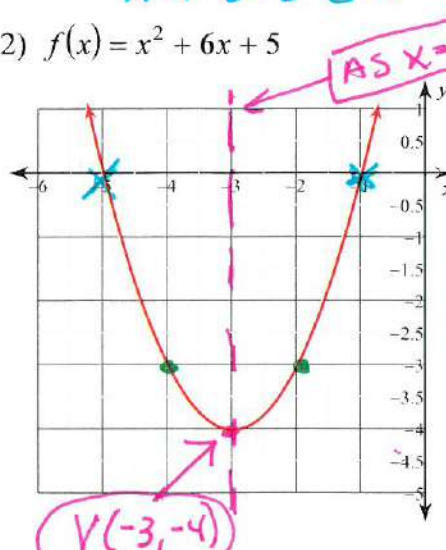
$$AS \ x = -\frac{B}{2A} = \frac{4}{2(1)} \ x = 2$$

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

Solutions → $x = 1, 3$

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

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



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

$$x = -3$$

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

Solutions are the
X intercepts
(x, 0)

Solutions
 $x = -1, -5$

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

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

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

Remember
When you take $\sqrt{\quad}$
You get 2 solutions (+/-)

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

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

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

$$\begin{array}{r} +9 \quad +9 \\ \hline \left(\frac{6}{5}, \frac{6}{5} \right) \end{array}$$

$$25x^2 = 36$$

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

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

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

$$\begin{array}{r} +3 \quad +3 \\ \hline \{4i, -4i\} \end{array}$$

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

$$\sqrt{x^2} = \sqrt{-16}$$

$$x = \pm 4i$$

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

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

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

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

$$\boxed{x = \pm 5}$$

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

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

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

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

$$x = 4 + 8$$

$$\boxed{x = 12}$$

$$x = 4 - 8$$

$$\boxed{x = -4}$$

ISOLATE
THE ()²

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

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

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

$$\begin{array}{r} x+3 = \pm 5 \\ -3 \quad -3 \end{array}$$

$$x = -3 \pm 5$$

$$x = -3 + 5$$

$$\boxed{x = 2}$$

$$x = -3 - 5$$

$$\boxed{x = -8}$$

Simplify. Leave in simple radical form.

11) $\sqrt{200}$

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

$$\boxed{10\sqrt{2}}$$

12) $\sqrt{150}$

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

$$\boxed{5\sqrt{6}}$$

13) $\sqrt{360}$

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

$$\boxed{6\sqrt{10}}$$

14) $\sqrt{576} = \boxed{24}$

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.

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

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

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

$$\begin{array}{r} 1 \quad 60 \\ 2 \quad 30 \\ 3 \quad 10 \\ 4 \quad 15 \\ \hline 6 \quad 10 \end{array}$$

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

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

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

$$\begin{array}{r} 1 \quad 50 \\ 2 \quad 25 \\ \hline 5 \quad 10 \end{array}$$

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

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

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

$$\begin{array}{r} 1 \quad 30 \\ 2 \quad 15 \\ 3 \quad 10 \\ \hline 5 \quad 6 \end{array}$$

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

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

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

$$\begin{array}{r} 1 \quad 35 \\ \hline 5 \quad 7 \end{array}$$

Solve each equation by factoring. CLEARLY SHOW ALL STEPS.

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

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

$$n+5=0$$

$$n=-5$$

$$n+8=0$$

$$n=-8$$

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

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

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

$$x=10$$

$$x=6$$

STEPS

① FACTOR

② SET EACH FACTOR = 0

③ SOLVE FOR X

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

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

$$x-4=0$$

$$x=4$$

$$x+2=0$$

$$x=-2$$

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

Solve each equation with the quadratic formula.

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

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

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

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

$$N = 5$$

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

$$N = -10$$

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) $4v^2 - 64 = 0$ $A=4$ $B=0$ $C=-64$

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

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

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

$$X = 6$$

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

$$X = -1$$

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

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

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

$$X = 4, -4$$

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 $i^2 = -1$

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

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

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

$$8 - 14i$$

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

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

$$-9i + 18i^2$$

$$-9i + 18(-1)$$

$$-18 - 9i$$