

Algebra 2 3.1 Solving Quadratic Equations

Pg. 99 [3, 4, 10, 13-23]

$$\boxed{18} \quad 2(x+2)^2 - 5 = -8$$

$$\frac{2(x+2)^2}{2} = \frac{13}{2}$$

$$\sqrt{(x+2)^2} = \sqrt{6.5}$$

$$x+2 = \pm\sqrt{6.5}$$

$$x+2 = 2.55 \quad \& \quad -2.55$$

$$-2 \quad -2 \quad -2$$

$$\boxed{x = .55 \quad \& \quad -4.55}$$

$$\boxed{19} \quad \frac{1}{2}r^2 - 10 = \frac{3}{2}r^2 + 10$$

$$\frac{1}{2}r^2 = \frac{3}{2}r^2 + 10$$

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

$$-\frac{1}{2}r^2 = 10$$

$$\sqrt{r^2} = \sqrt{-10}$$

imaginary

NO SOLUTIONS

$$\boxed{20} \quad \frac{1}{5}x^2 + 2 = \frac{3}{5}x^2$$

$$-\frac{1}{5}x^2 \quad -\frac{1}{5}x^2$$

$$2 = \frac{2}{5}x^2$$

or

$$\left(\frac{5}{2}\right) \frac{2}{5}x^2 = 2 \cdot \left(\frac{5}{2}\right)$$

$$\sqrt{x^2} = \sqrt{5}$$

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

$\boxed{21}$ From Picture ~~all~~ $x = -2$

a) $\frac{6}{2(-3)} = (-3, 1)$

Yes

b) $x = -2 \quad x = -4$

Yes



$v(-2, 4)$
 $a = -1 \quad x = 0$ NO

d) $\frac{4}{2(2)} = 1 \quad (1, 8)$ NO

e) $v(-3, -4)$

Yes

$$\boxed{22} \quad \left(x - \frac{3}{2}\right)^2 = \frac{25}{4}$$

$$\sqrt{\left(x - \frac{3}{2}\right)^2} = \pm\sqrt{\frac{25}{4}}$$

$$x - \frac{3}{2} = \pm\sqrt{\frac{25}{4}} = \pm\frac{5}{2}$$

$$x - \frac{3}{2} = \frac{5}{2} \quad \text{or} \quad -\frac{5}{2}$$

$$+\frac{3}{2} \quad +\frac{3}{2}$$

$$x = \frac{8}{2} \quad \text{or} \quad -\frac{2}{2}$$

$$x = 4 \quad \text{or} \quad -1$$

B

$$\boxed{10} \quad 2x = x^2 + 2$$

$$x^2 - 2x + 2 = 0$$

$$a = 1 \quad b = -2 \quad c = 2$$

$$\frac{-b}{2a} = \frac{2}{2(1)} = \frac{2}{2} = 1$$

Y-point

$$(1)^2 - 2(1) + 2$$

$$1 - 2 + 2$$

$$-1 + 2 = 1$$

Vertex = (1, 1)

G-value = 1

$$\textcircled{13} \quad S^2 = 144$$

$$\sqrt{S^2} = \sqrt{144}$$

$$S = \pm \sqrt{144}$$

$$S = 12 \text{ \& } -12$$

$$\textcircled{14} \quad \sqrt{a^2} = 81$$

$$a = 9 \text{ \& } -9$$

$$\textcircled{15} \quad (x-6)^2 = 25$$

$$\sqrt{(x-6)^2} = \sqrt{25}$$

$$x-6 = 5 \text{ \& } -5$$

+6 +6 +6

$$\boxed{x = 11 \text{ \& } 1}$$

$$\textcircled{16} \quad \sqrt{(p-4)^2} = \sqrt{49}$$

$$p-4 = 7 \text{ \& } -7$$

+4 +4 4

$$\boxed{p = 11 \text{ \& } -3}$$

$$\textcircled{17} \quad 4(x-1)^2 + 2 = 10$$

-2 -2

$$\frac{4(x-1)^2}{4} = \frac{8}{4}$$

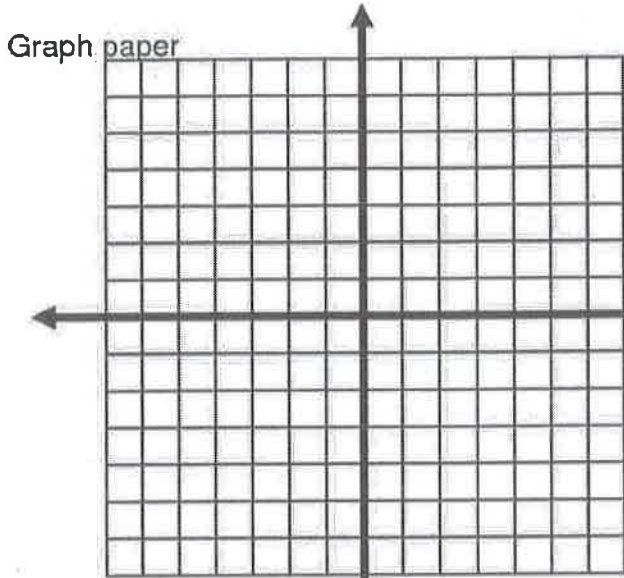
$$\sqrt{(x-1)^2} = \sqrt{2}$$

$$x-1 = \pm \sqrt{2}$$

$$\boxed{x = 1 \pm \sqrt{2}}$$

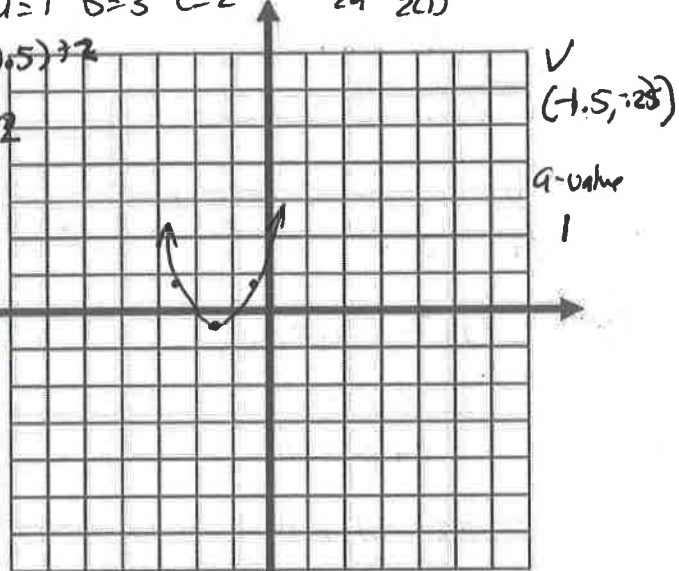
#3 $x^2 + 3x + 2 = 0$
 $a=1$ $b=3$ $c=2$

vertex:
 $-\frac{b}{2a} = \frac{-3}{2(1)} = -1.5$



$(-1.5)^2 + 3(-1.5) + 2$
 $2.25 - 4.5 + 2$
 $-2.25 + 2$
 $-.25$

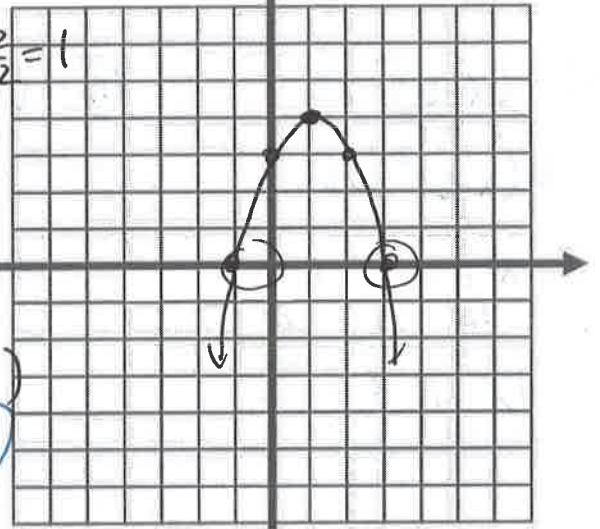
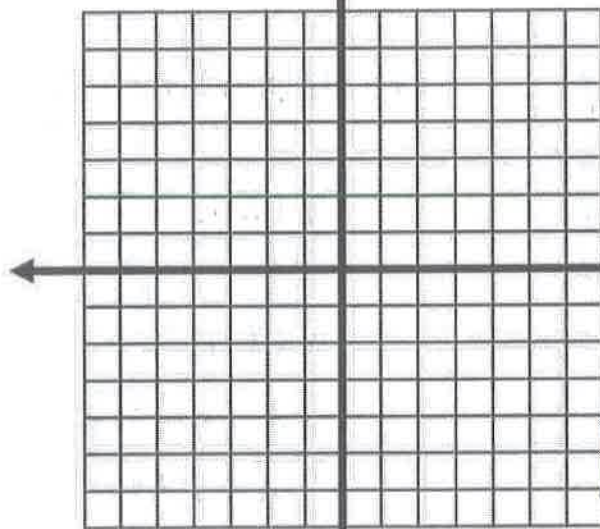
$x = -2$
 $x = -1$



#4 $-x^2 + 2x + 3 = 0$ $a=-1$ $b=2$ $c=3$

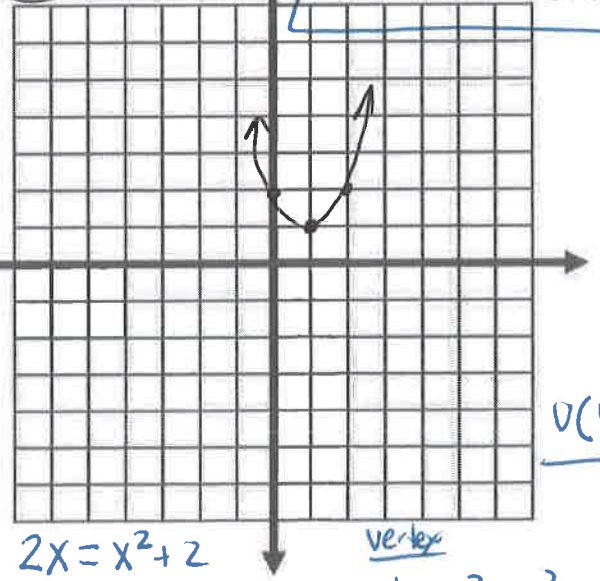
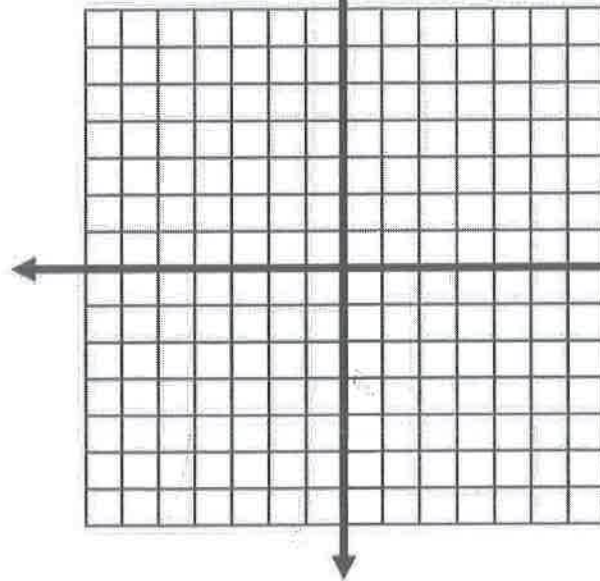
Vertex
 $-\frac{b}{2a} = \frac{-2}{2(-1)} = \frac{-2}{-2} = 1$
 $- (1)^2 + 2(1) + 3$
 $-1 + 2 + 3$
 $1 + 3 = 4$

Vertex $(1, 4)$
 $x = -1$; 3



#10

No Solutions



$2x = x^2 + 2$
 $x^2 - 2x + 2 = 0$ $a=1$ $b=-2$ $c=2$
 vertex
 $-\frac{b}{2a} = \frac{2}{2(1)} = \frac{2}{2} = 1$