

skip 3! → don't need to do,

Ch. 9 Review pg. 534: 1-5, 7-11, 14-22 even, 23, 25, 27-32

pg. 537: 1, 4, 5 Solve by factoring

page 534

$$1. \sqrt{72p^7} = \sqrt{36 \cdot 2 \cdot p^6 \cdot p^1} = 6p^3 \sqrt{2p}$$

$$2. \sqrt{\frac{45}{7y}} = \frac{\sqrt{9 \cdot 5}}{\sqrt{7y}} = \frac{3\sqrt{5}}{\sqrt{7y}} \cdot \frac{\sqrt{7y}}{\sqrt{7y}} = \frac{3\sqrt{35y}}{7y}$$

$$4. \frac{8}{\sqrt{6}+2} = \frac{8(\sqrt{6}-2)}{(\sqrt{6}+2)(\sqrt{6}-2)} = \frac{8\sqrt{6}-16}{\sqrt{36}-4} = \frac{8\sqrt{6}-16}{6-4} = \frac{8\sqrt{6}-16}{2}$$

$$= 4\sqrt{6} - 8$$

$$5. 4\sqrt{3} + 5\sqrt{12} = 4\sqrt{3} + 5 \cdot 2\sqrt{3}$$

$$= 4\sqrt{3} + 10\sqrt{3} = 14\sqrt{3}$$

$$7. (3\sqrt{7}+5)(3\sqrt{7}+5) = 9\sqrt{49} + 15\sqrt{7} + 15\sqrt{7} + 25$$

$$= 9 \cdot 7 + 30\sqrt{7} + 25$$

$$= 63 + 25 + 30\sqrt{7} = 88 + 30\sqrt{7}$$

$$8. \sqrt{6}(\sqrt{18} + \sqrt{8}) = \sqrt{6}(3\sqrt{2} + 2\sqrt{2}) = \sqrt{6}(5\sqrt{2})$$

$$= 5\sqrt{12} = 5 \cdot 2\sqrt{3}$$

$$= 10\sqrt{3}$$

9-11 On graph paper.

$$14. x^2 + 5 = 17$$

$$\sqrt{x^2} = \sqrt{12}$$

$$x = \pm 2\sqrt{3}$$

$$x \approx 3.46$$

$$x \approx -3.46$$

$$16. \sqrt{(x+2)^2} = \sqrt{64}$$

$$x+2 = \pm 8$$

$$x = -2 \pm 8$$

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

$$18. \sqrt{(x-1)^2} = 0$$

$$x-1 = 0$$

$$x = 1$$

$$20. x^2 + 6x - 40 = 0 \quad b = 6$$

$$x^2 + 6x = 40 \quad \frac{6}{2} = 3 \quad 3^2 = 9$$

$$x^2 + 6x + 9 = 40 + 9$$

$$\sqrt{(x+3)^2} = \sqrt{49}$$

$$x+3 = \pm 7$$

$$x = -3 \pm 7$$

$$x = -10 \text{ or } x = 4$$

$$22. 2x^2 - 4x = 10$$

$$2(x^2 - 2x) = 10 \quad b = -2$$

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

$$x^2 - 2x + 1 = 5 + 1$$

$$\sqrt{(x-1)^2} = \sqrt{6}$$

$$x-1 = \pm\sqrt{6}$$

$$x = 1 \pm \sqrt{6}$$

$$x \approx 3.45$$

$$x \approx -1.45$$

$$23. y = -x^2 + 6x - 1 \quad \downarrow \text{ has max.}$$

$$y+1 = -x^2 + 6x$$

$$b = -6$$

$$\frac{-6}{2} = -3 \quad (-3)^2 = 9$$

$$y+1 = -1(x^2 - 6x)$$

$$y+1-9 = -1(x^2 - 6x + 9)$$

$$y-8 = -1(x-3)^2$$

vertex (3, 8)

$$y = -1(x-3)^2 + 8$$

The maximum value of the function is 8.

25.  $y = 3x^2 - 24x + 15$   $\uparrow$  has minimum

$$y - 15 = 3x^2 - 24x \quad b = -8$$

$$y - 15 = 3(x^2 - 8x) \quad -\frac{8}{2} = \textcircled{-4} \quad (-4)^2 = 16$$

$$y - 15 + 48 = 3(x^2 - 8x + 16)$$

$$y + 33 = 3(x - 4)^2 \quad (4, -33) \text{ vertex}$$

$$y = 3(x - 4)^2 - 33$$

The minimum value is -33.

27.  $x^2 + 2x - 15 = 0$   $a = 1$   $b = 2$   $c = -15$

$$x = \frac{-2 \pm \sqrt{2^2 - 4(1)(-15)}}{2(1)}$$

$$x = \frac{-2 \pm \sqrt{4 + 60}}{2} = \frac{-2 \pm 8}{2}$$

$$\begin{aligned} x &= \frac{6}{2} = 3 \\ x &= \frac{-10}{2} = -5 \end{aligned}$$

28.  $2x^2 - x + 8 = 16$

$$a = 2 \quad b = -1 \quad c = -8$$

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

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

$$x = \frac{1 \pm \sqrt{1 + 64}}{4} = \frac{1 \pm \sqrt{65}}{4} \quad \begin{aligned} x &\approx 2.3 \\ x &\approx -1.8 \end{aligned}$$

29.  $-5x^2 + 10x - 5 = 0$

$$a = -5 \quad b = 10 \quad c = -5$$

$$x = \frac{-10 \pm \sqrt{100 - 4(-5)(-5)}}{2(-5)}$$

$$x = \frac{-10 \pm \sqrt{0}}{-10} = \boxed{1}$$

$$30. y = -x^2 + 6x - 9 \quad a = -1 \quad b = 6 \quad c = -9$$

$$b^2 - 4ac = 36 - 4(-1)(-9)$$

$$= 36 - 36 = 0$$

1 x-intercept

$$31. y = 2x^2 + 4x + 8 \quad a = 2 \quad b = 4 \quad c = 8$$

$$4^2 - 4(2)(8) = 16 - 64 = -48$$

No x-intercepts

$$32. y = \frac{1}{2}x^2 + 2x \quad a = \frac{1}{2} \quad b = 2 \quad c = 0$$

$$2^2 - 4\left(\frac{1}{2}\right)(0) = 4 - 0 = 4$$

2 x-intercepts

9.  $x^2 - 9x + 18 = 0$

$y = x^2 - 9x + 18$

$a = 1 \quad b = -9 \quad c = 18 \quad \uparrow$

$x = \frac{9}{2} = 4.5 \quad \text{AoS}$

$y = (4.5)^2 - 9(4.5) + 18$

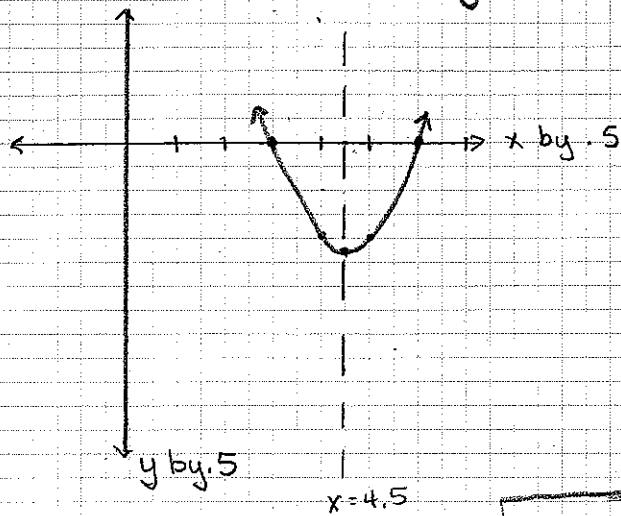
$y = -2.25 \quad \text{Vertex } (4.5, -2.25)$

check  $x = 3$

$3^2 - 9(3) + 18 = y$

$9 - 27 + 18 = y$

$0 = y \quad (3, 0)$



$x = 3 \text{ or } x = 6$

10.  $x^2 - 2x = -4$

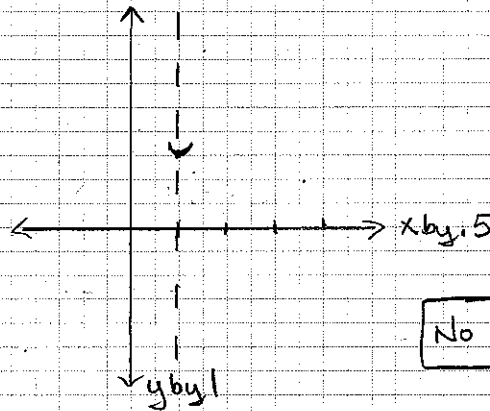
$x^2 - 2x + 4 = y$

$\uparrow a = 1 \quad b = -2 \quad c = 4$

$x = \frac{2}{2(1)} = 1$

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

$y = 1 - 2 + 4 = 3 \quad (1, 3)$



No real solutions

11.  $-8x - 16 = x^2$

$y = x^2 + 8x + 16$

$\uparrow a = 1 \quad b = 8 \quad c = 16$

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

$y = (-4)^2 + 8(-4) + 16$

$y = 16 - 32 + 16 = 0 \quad (-4, 0)$

$x = -4$

