

## Assignment 30

**NEW** Book: P350 #7, 11-27 odd, 31

$$7. x^2 - 7x + c \quad c = \left(-\frac{7}{2}\right)^2 = \boxed{\frac{49}{4}}$$

$$11. x^2 - 7x + 4 = 0 \quad \left(\frac{b}{2}\right)^2 = \left(\frac{-7}{2}\right)^2 = \frac{49}{4}$$

$$x^2 - 7x + \frac{49}{4} = -4 + \frac{49}{4}$$

$$\left(x - \frac{7}{2}\right)^2 = \frac{-16}{4} + \frac{49}{4}$$

$$\sqrt{\left(x - \frac{7}{2}\right)^2} = \pm \sqrt{\frac{33}{4}}$$

$$x - \frac{7}{2} = \pm \sqrt{\frac{33}{4}}$$

$$\boxed{x = \frac{7 \pm \sqrt{33}}{2}}$$

$$13. x^2 + 2x + 6 = 0 \quad \left(\frac{b}{2}\right)^2 = \left(\frac{2}{2}\right)^2 = 1^2 = 1$$

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

$$\sqrt{(x+1)^2} = \sqrt{-5}$$

$$x + 1 = \pm \sqrt{-5}$$

$$\boxed{x = -1 \pm i\sqrt{5}}$$

$$15. x^2 + 2x + c \quad c = \left(\frac{b}{2}\right)^2 = \left(\frac{2}{2}\right)^2 = 1^2 = \boxed{1}$$

$$17. t^2 + 40t + c \quad c = \left(\frac{40}{2}\right)^2 = 20^2 = \boxed{400}$$

$$19. a^2 - 100a + c \quad c = \left(\frac{-100}{2}\right)^2 = (-50)^2 = \boxed{2500}$$

$$21. x^2 + 3x - 18 = 0$$

$$x^2 + 3x + \frac{9}{4} = 18 + \frac{9}{4}$$

$$\left(x + \frac{3}{2}\right)^2 = \frac{72}{4} + \frac{9}{4}$$

$$\sqrt{\left(x + \frac{3}{2}\right)^2} = \pm \sqrt{\frac{81}{4}}$$

$$x + \frac{3}{2} = \pm \frac{9}{2}$$

$$x = -\frac{3}{2} \pm \frac{9}{2}$$

$$\left(\frac{3}{2}\right)^2 = \frac{9}{4}$$

$$x = -\frac{3}{2} \pm \frac{9}{2}$$

$$x = \frac{-3+9}{2} = \frac{6}{2} = 3, \quad x = \frac{-3-9}{2} = \frac{-12}{2} = -6$$

$$\boxed{x = 3, -6}$$

Asmt 30, continued

23.  $x^2 - 8x + 11 = 0$

$\left(\frac{-8}{2}\right)^2 = (-4)^2 = 16$

$x^2 - 8x + \frac{16}{1} = -11 + \frac{16}{1}$

$\sqrt{(x-4)^2} = \sqrt{5}$

$x - 4 = \pm\sqrt{5}$   
+4 +4

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

25.  $x^2 + 9x + 20.25 = 0$

$\left(\frac{9}{2}\right)^2 = \frac{81}{4} = 20.25$

$x^2 + 9x + \frac{81}{4} = -20.25 + \frac{81}{4}$

$\sqrt{(x + \frac{9}{2})^2} = \sqrt{0}$

$x + \frac{9}{2} = 0$

$x = -\frac{9}{2}$

27.  $x^2 + 4x + 11 = 0$

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

$x^2 + 4x + 4 = -11 + 4$

$\sqrt{(x+2)^2} = \sqrt{-7}$

$x + 2 = \pm i\sqrt{7}$

$x = -2 \pm i\sqrt{7}$

31.  $x^2 - 3x - 20 = 0$

$\left(\frac{-3}{2}\right)^2 = \frac{9}{4}$

$x^2 - 3x + \frac{9}{4} = 20 + \frac{9}{4}$

$(x - \frac{3}{2})^2 = \frac{80}{4} + \frac{9}{4}$

$\sqrt{(x - \frac{3}{2})^2} = \sqrt{\frac{89}{4}}$

$x - \frac{3}{2} = \pm \frac{\sqrt{89}}{2}$

$x = \frac{3 \pm \sqrt{89}}{2}$

REVIEW (packet)

1.  $|3x + 4| = 1$   $x = -1, -\frac{5}{3}$

$3x + 4 = 1 \rightarrow 3x = -3 \rightarrow x = -1$

$3x + 4 = -1 \rightarrow 3x = -5 \rightarrow x = -\frac{5}{3}$

Asmt 30 ~ Continued

2. Slope =  $\frac{1}{5}$ , passes through  $(5, 2)$

$$y = mx + b$$

$$2 = \frac{1}{5}(5) + b$$

$$\frac{2}{1} = \frac{1}{1} + b$$

$$1 = b$$

$$y = \frac{1}{5}x + 1$$

3.  $(x^{-5}y^3z^{10})^{-3/5}$

$$= \left(\frac{y^3z^{10}}{x^5}\right)^{-3/5} = \left(\frac{x^5}{y^3z^{10}}\right)^{3/5} = \frac{x^{15/5}}{y^{9/5}z^{30/5}} = \frac{x^3}{y^{9/5}z^6}$$

4.  $(4+i)(4-i) = 16 + 4i - 4i - i^2 = 16 + 1 = 17$

5.  $(-i\sqrt{6})(-i\sqrt{15}) = i^2\sqrt{6 \cdot 15} = -1 \cdot 3\sqrt{10} = -3\sqrt{10}$

6.  $\frac{(2+7i) \cdot 5i}{-5i \cdot 5i} = \frac{10i + 35i^2}{-25i^2} = \frac{10i - 35}{25} = \frac{5(2i - 7)}{5(5)} = \frac{-7 + 2i}{5}$

7.  $\frac{(1-2i)^2}{(2-i)^2} = \frac{(1-2i)(1-2i)}{(2-i)(2-i)} = \frac{1-2i-2i+4i^2}{4-2i-2i+i^2} = \frac{1-4i-4}{4-4i-1} = \frac{-3-4i}{3-4i}$

$$= \frac{(-3-4i)(3+4i)}{(3-4i)(3+4i)} = \frac{-9-12i-12i-16i^2}{9-12i+12i-16i^2} = \frac{-9-24i+16}{9+16} = \frac{7-24i}{25}$$

8. Solve with calculator:  $x^4 - 4x^2 + 3 = 0$

$$x = -1.732, -1, 1, 1.732$$

9. Solve with calculator:  $1.8x - 6\sqrt{x} - 5.6 = 0$

$$x = 16.756$$

10.  $\frac{|x^2-3|}{-2x} = 2x \rightarrow |x^2-3| - 2x = 0$

$$x = 1, 3$$

11. Use calculator to find vertex:  $h(x) = x^2 - 10x + 27$

$$(5, 2)$$

Asmt 30 - continued

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$$\begin{aligned} 12. \sqrt{x+9} &= 9 - \sqrt{x} \\ \sqrt{x+9}^2 &= (9 - \sqrt{x})^2 \\ x+9 &= 81 - 9\sqrt{x} - 9\sqrt{x} + x \\ -x - 81 - 81 & \quad \quad \quad -x \\ \hline -72 &= -18\sqrt{x} \\ -18 & \quad \quad -18 \end{aligned}$$

$$\begin{aligned} 4 &= \sqrt{x} \\ 4^2 &= \sqrt{x}^2 \\ \boxed{16} &= x \end{aligned}$$

the best answer is d. 16

$$\begin{aligned} 26. \frac{6 - \sqrt{2y+1}}{-6} &= 3 \\ \frac{-\sqrt{2y+1}}{-1} &= \frac{-3}{-1} \\ \sqrt{2y+1}^2 &= 3^2 \end{aligned}$$

$$\begin{aligned} 2y+1 &= 9 \\ \frac{2y}{2} &= \frac{8}{2} \rightarrow \boxed{y=4} \end{aligned}$$

$$\begin{aligned} 38. \frac{(6q-5)^{1/3} + 2}{-2} &= \frac{-3}{-2} \\ ((6q-5)^{1/3})^3 &= (-5)^3 \\ \frac{6q-5}{+5} &= \frac{-125}{+5} \\ 6q &= -120 \end{aligned}$$

$$\begin{aligned} \frac{6q}{6} &= \frac{-120}{6} \\ \boxed{q} &= -20 \end{aligned}$$

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$$\begin{aligned} 16. f(x) &= 4x^2 + 5x - 9 \\ f(6) &= 4(6)^2 + 5(6) - 9 \\ &= 4(36) + 30 - 9 \\ &= 144 + 30 - 9 \\ &= 174 - 9 \\ \boxed{f(6)} &= \boxed{165} \end{aligned}$$

$$\begin{aligned} 17. f(x) &= 4(x)^2 + 5x - 9 \\ f(-2) &= 4(-2)^2 + 5(-2) - 9 \\ &= 4 \cdot 4 - 10 - 9 \\ &= 16 - 10 - 9 \\ &= 6 - 9 \\ \boxed{f(-2)} &= \boxed{-3} \end{aligned}$$

Asmt 30 - continued

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18.  $f(x) = 4x^2 + 5x - 9$

$$f(3y) = 4(3y)^2 + 5(3y) - 9$$
$$= 4 \cdot 9y^2 + 15y - 9$$

$$\boxed{f(3y) = 36y^2 + 15y - 9}$$

19.  $f(x) = 4x^2 + 5x - 9$

$$f(-2v) = 4(-2v)^2 + 5(-2v) - 9$$
$$= 4(4v^2) - 10v - 9$$

$$\boxed{f(-2v) = 16v^2 - 10v - 9}$$

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12. Solve:  $z(z-1) = 0$

$$z = 0 \quad \begin{array}{r} z-1=0 \\ +1 \quad +1 \\ \hline z=1 \end{array} \rightarrow \boxed{z = 0, 1}$$

18.  $y^2 + y - 30 = 0 \rightarrow (y+6)(y-5) = 0$

$$\begin{array}{l} y+6=0 \\ -6 \quad -6 \\ \hline y=-6 \end{array} \quad \begin{array}{l} y-5=0 \\ +5 \quad +5 \\ \hline y=5 \end{array}$$

$$\rightarrow \boxed{y = -6, 5}$$

22.  $4y^2 = 25$

$$\begin{array}{r} 4y^2 = 25 \\ -25 \quad -25 \\ \hline \end{array}$$

$$4y^2 - 25 = 0 \rightarrow (2y+5)(2y-5) = 0$$

$$\begin{array}{r} 2y+5=0 \\ -5 \quad -5 \\ \hline 2y=-5 \end{array}$$

$$\frac{2y}{2} = \frac{-5}{2}$$
$$y = -\frac{5}{2}$$

$$\begin{array}{r} 2y-5=0 \\ +5 \quad +5 \\ \hline 2y=5 \end{array}$$

$$\frac{2y}{2} = \frac{5}{2}$$
$$y = \frac{5}{2}$$

$$\boxed{y = -\frac{5}{2}, \frac{5}{2}}$$

Page 363: Write a quadratic equation with the given roots

18.  $x = 5, -1$

$$x = 5 \quad x = -1$$

$$(x-5) = 0 \quad (x+1) = 0$$

$$(x-5)(x+1) = 0$$

$$x^2 + x - 5x - 5 = 0$$

$$\boxed{x^2 - 4x - 5 = 0}$$

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22.  $x = -\frac{2}{5}, \frac{2}{7}$

5.  $x = -\frac{2}{5}$       7.  $x = \frac{2}{7}$

$5x = -2$        $7x = 2$   
 $(5x+2) = 0$        $(7x-2) = 0$

$(5x+2)(7x-2) = 0$   
 $35x^2 - 10x + 14x - 4 = 0$   
 $35x^2 + 4x - 4 = 0$