

section 6.5

6.5 LI

$$278) (5b+1)(6b+1)=0$$

$\begin{array}{r} 5b+1=0 \\ -1 \quad -1 \\ \hline 5b=-1 \\ \frac{5}{5} \quad \frac{1}{5} \\ \hline b=-\frac{1}{5} \end{array}$	$\begin{array}{r} 6b+1=0 \\ -1 \quad -1 \\ \hline 6b=-1 \\ \frac{6}{6} \quad \frac{1}{6} \\ \hline b=-\frac{1}{6} \end{array}$
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$$280) 2x(6x-3)=0$$

$\begin{array}{r} 2x=0 \\ \frac{2}{2} \quad \frac{0}{2} \\ \hline x=0 \end{array}$	$\begin{array}{r} 6x-3=0 \\ +3 \quad +3 \\ \hline 6x=3 \\ \frac{6}{6} \quad \frac{3}{6} \\ \hline x=\frac{1}{2} \end{array}$
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$$282) (3y+5)^2=0$$

$\begin{array}{r} 3y+5=0 \\ -5 \quad -5 \\ \hline 3y=-5 \\ \frac{3}{3} \quad \frac{-5}{3} \\ \hline y=-\frac{5}{3} \end{array}$

$$286) 4b^2 + 7b = -3$$

$+3 \quad +3$

$$4b^2 + 7b + 3 = 0$$

$\begin{matrix} 4 \\ (1)(4) \\ (2)(2) \end{matrix}$

$\begin{matrix} 3 \\ (1)(3) \end{matrix}$

$$(1)b + (1)(4b+3) = 0$$

$\begin{matrix} \nearrow 7 \\ \uparrow 3 \end{matrix}$

$$+ (4)(1) + (1)(3)$$

$+4+3$

$+7$

$$(b+1)(4b+3)=0$$

$\begin{array}{r} b+1=0 \\ -1 \quad -1 \\ \hline b=-1 \end{array}$	$\begin{array}{r} 4b+3=0 \\ -3 \quad -3 \\ \hline 4b=-3 \\ \frac{4}{4} \quad \frac{-3}{4} \\ \hline b=-\frac{3}{4} \end{array}$
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$$b = -\frac{3}{4}$$

$$288) 12b^2 - 15b = -9b$$

$+9b \quad +9b$

$$12b^2 - 4b = 0$$

$$4b(3b-1)=0$$

$\begin{array}{r} 4b=0 \\ \frac{4}{4} \quad \frac{0}{4} \\ \hline b=0 \end{array}$	$\begin{array}{r} 3b-1=0 \\ +1 \quad +1 \\ \hline 3b=1 \\ \frac{3}{3} \quad \frac{1}{3} \\ \hline b=\frac{1}{3} \end{array}$
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$$b = \frac{1}{3}$$

$$290) 625 = x^2$$

$$-625 \quad -625$$

$$0 = x^2 - 625$$

$$0 = x^2 - (25)^2$$

$$0 = (x+25)(x-25)$$

$\begin{array}{r} x+25=0 \\ -25 \quad -25 \\ \hline x=-25 \end{array}$	$\begin{array}{r} x-25=0 \\ +25 \quad +25 \\ \hline x=25 \end{array}$
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$$292) \begin{array}{r} 64p^2 = 225 \\ -225 \quad -225 \\ \hline \end{array}$$

$$64p^2 - 225 = 0$$

$$(8p)^2 - (15)^2 = 0$$

$$(8p+15)(8p-15) = 0$$

$8p+15=0$	$8p-15=0$
$\begin{array}{r} -15 \quad -15 \\ \hline \end{array}$	$\begin{array}{r} +15 \quad +15 \\ \hline \end{array}$
$\frac{8p}{8} = \frac{-15}{8}$	$\frac{8p}{8} = \frac{15}{8}$
$\underline{\underline{p = -\frac{15}{8}}}$	$\underline{\underline{p = \frac{15}{8}}}$

$$294) \begin{array}{r} 100y^2 = 9 \\ -9 \quad -9 \\ \hline \end{array}$$

$$100y^2 - 9 = 0$$

$$(10y)^2 - (3)^2 = 0$$

$$(10y+3)(10y-3) = 0$$

$10y+3=0$	$10y-3=0$
$\begin{array}{r} -3 \quad -3 \\ \hline \end{array}$	$\begin{array}{r} +3 \quad +3 \\ \hline \end{array}$
$\frac{10y}{10} = \frac{-3}{10}$	$\frac{10y}{10} = \frac{3}{10}$
$\underline{\underline{y = -\frac{3}{10}}}$	$\underline{\underline{y = \frac{3}{10}}}$

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$$296) (p-5)(p+3) = -7$$

$$p^2 - 2p - 15 = -7$$

$$\begin{array}{r} +7 \quad +7 \\ \hline \end{array}$$

$$p^2 - 2p - 8 = 0$$

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

8
(1)(8)
(2)(4)

$$\begin{array}{r} + (2) - (4) \\ +2 - 4 \\ \underline{-2} \end{array}$$

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

$p+2=0$	$p-4=0$
$\begin{array}{r} -2 \quad -2 \\ \hline \end{array}$	$\begin{array}{r} +4 \quad +4 \\ \hline \end{array}$
$\underline{\underline{p = -2}}$	$\underline{\underline{p = 4}}$

$$298) (y-3)(y+2) = 4y$$

$$y^2 - y - 6 = 4y$$

$$\begin{array}{r} -4y \quad -4y \\ \hline \end{array}$$

$$y^2 - 5y - 6 = 0$$

$$(y+(1))(y-(6)) = 0$$

$$\begin{array}{r} + (1) - (6) \quad \quad \quad 6 \\ \quad \quad \quad \uparrow \quad \quad \quad \uparrow \quad \quad \quad (1)(6) \\ \quad (2)(3) \\ +1 - 6 \\ \underline{-5} \end{array}$$

$$(y+1)(y-6) = 0$$

$y+1=0$	$y-6=0$
$\begin{array}{r} -1 \quad -1 \\ \hline \end{array}$	$\begin{array}{r} +6 \quad +6 \\ \hline \end{array}$
$\underline{\underline{y = -1}}$	$\underline{\underline{y = 6}}$

300) (2y-3)(3y-1) = 8y

6y^2 - 11y + 3 = 8y
-8y -8y

6y^2 - 19y + 3 = 0

AC method for 6y^2 - 19y + 3 = 0. Factors: (6y-1)(y-1) = 0. Cross-multiplication diagram showing (6)(1) and (1)(1) for the constant term, and (1)(1) and (6)(3) for the middle term.

(6y-1)(y-1) = 0

6y-1=0 | y-1=0
+1 +1 | +1 +1
6y=1 | y=1
6 6 |
y=1/6 |

302) 3y^2 - 18y = -27

+27 +27
3y^2 - 18y + 27 = 0

3(y^2 - 6y + 9) = 0

3(y-3)(y-3) = 0

(3) - (3)
-3 -3
-6

3(y-3)(y-3) = 0

3(y-3)^2 = 0

(y-3)^2 = 0

y-3 = 0

+3 +3

y = 3

304) 14y^2 - 77y = -35

+35 +35
14y^2 - 77y + 35 = 0

7(2y^2 - 11y + 5) = 0

7((2y-1)(y-5)) = 0

(1) (1) - (2) (5)
-1 -10 -11

7(2y-1)(y-5) = 0

2y-1=0 | y-5=0
+1 +1 | +5 +5

2y=1
2 2

y=1/2

y=5

$$306) \begin{array}{r} 16y^2 + 12 = -32y \\ +32y \quad +32y \\ \hline 16y^2 + 32y + 12 = 0 \end{array}$$

$$16y^2 + 32y + 12 = 0$$

$$4(4y^2 + 8y + 3) = 0$$

$$\begin{array}{l} 4 \\ (1)(4) \\ (2)(2) \end{array} 4((2)y + (1))((2)y + (3)) = 0$$

$$+ (2)(1) + (2)(3) \quad (1)(3)$$

$$\begin{array}{l} +2+6 \\ +8 \end{array}$$

$$4(2y+1)(2y+3) = 0$$

$$\begin{array}{r|l} 2y+1=0 & 2y+3=0 \\ -1 & -3 \\ \hline 2y=-1 & 2y=-3 \\ \frac{2y}{2} & \frac{2y}{2} \\ \hline y=-\frac{1}{2} & y=\frac{-3}{2} \end{array}$$

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$$308) \begin{array}{r} m^3 - 2m^2 = -m \\ +m \quad +m \\ \hline m^3 - 2m^2 + m = 0 \end{array}$$

$$m^3 - 2m^2 + m = 0$$

$$m(m^2 - 2m + 1) = 0 \quad (1)(1)$$

$$m(m - (1))(m - (1)) = 0$$

$$- (1) - (1)$$

$$-1-1$$

$$-2$$

$$m(m-1)(m-1) = 0$$

$$m(m-1)^2 = 0$$

$$\begin{array}{r|l} m=0 & (m-1)^2=0 \\ \hline & m-1=0 \\ & +1+1 \\ \hline & m=1 \end{array}$$

$$310) \begin{array}{r} 3y^3 + 48y = 24y^2 \\ -24y^2 \quad -24y^2 \\ \hline 3y^3 - 24y^2 + 48y = 0 \end{array}$$

$$3y^3 - 24y^2 + 48y = 0$$

$$3y(y^2 - 8y + 16) = 0$$

$$3y(y - (4))(y - (4)) = 0$$

$$- (4) - (4)$$

$$-4-4$$

$$-8$$

$$3y(y-4)(y-4) = 0$$

$$3y(y-4)^2 = 0$$

$$\begin{array}{r|l} 3y=0 & (y-4)^2=0 \\ \frac{3y}{3} & y-4=0 \\ \hline y=0 & +4+4 \\ \hline & y=4 \end{array}$$

$$y=0$$

$$y=4$$

$$3(2) \quad 2y^3 + 2y^2 = 12y$$

$$\begin{array}{r} -12y \quad -12y \\ \hline 2y^3 + 2y^2 - 12y = 0 \end{array}$$

$$2y(y^2 + y - 6) = 0 \quad \begin{array}{l} 6 \\ (1)(6) \\ (2)(3) \end{array}$$

$$2y(y + (3))(y - (2)) = 0$$

$$+ \quad \begin{array}{c} \uparrow \quad \uparrow \\ (3) - (2) \end{array}$$

$$+3-2$$

$$\underline{+1}$$

$$2y(y+3)(y-2) = 0$$

$$\begin{array}{l|l|l} 2y=0 & y+3=0 & y-2=0 \\ \hline \frac{2y}{2} \quad \frac{2}{2} & -3 \quad -3 & +2 \quad +2 \end{array}$$

$$\begin{array}{l|l|l} \underline{y=0} & \underline{y=-3} & \underline{y=2} \end{array}$$

for 313 - 316 do part a only

$$3(4) \quad f(x) = x^2 + 11x + 20$$

$$a) \quad -8 = f(x) = x^2 + 11x + 20$$

$$\begin{array}{r} -8 = x^2 + 11x + 20 \\ +8 \quad \quad \quad +8 \\ \hline 0 = x^2 + 11x + 28 \end{array}$$

$$28$$

$$(1)(28)$$

$$(2)(14)$$

$$(4)(7)$$

$$0 = (x + (4))(x + (7))$$

$$+ \quad \begin{array}{c} \uparrow \quad \uparrow \\ (4) + (7) \end{array}$$

$$+4+7$$

$$\underline{+11}$$

$$0 = (x+4)(x+7)$$

$$\begin{array}{l|l} x+4=0 & x+7=0 \\ \hline -4 \quad -4 & -7 \quad -7 \\ \hline \underline{x=-4} & \underline{x=-7} \end{array}$$

$$316) f(x) = 18x^2 + 15x - 10$$

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$$a) 15 = f(x) = 18x^2 + 15x - 10$$

$$\begin{array}{r} 15 = 18x^2 + 15x - 10 \\ -15 \qquad \qquad \qquad -15 \\ \hline \end{array}$$

$$0 = 18x^2 + 15x - 25$$

18
(1)(18)
(2)(9)
(3)(6)

$$0 = ((3)x + (5))((6)x - (5))$$

$$+ (6)(5) - (3)(5)$$

$$+30 - 15$$

$$+15$$

25
(1)(25)
(5)(5)

$$0 = (3x+5)(6x-5)$$

$$\begin{array}{l|l} 3x+5=0 & 6x-5=0 \\ -5 \quad -5 & +5 \quad +5 \\ \hline \end{array}$$

$$\frac{3x}{3} = \frac{-5}{3}$$

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

$$\underline{\underline{x = -\frac{5}{3}}}$$

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

for 317-320 part a and b are 2 different ways to ask for same work

$$318) f(x) = 25x^2 - 49 \quad | \quad 320) f(x) = 12x^2 - 11x + 2$$

$$a, b) 0 = f(x) = 25x^2 - 49$$

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

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

$$\begin{array}{l|l} 5x+7=0 & 5x-7=0 \\ -7 \quad -7 & +7 \quad +7 \\ \hline \end{array}$$

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

$$\frac{5x}{5} = \frac{7}{5}$$

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

$$x = \frac{7}{5}$$

$$\underline{\underline{(\frac{-7}{5}, 0)}}$$

$$\underline{\underline{(\frac{7}{5}, 0)}}$$

$$c) f(0) = 25(0)^2 - 49 = -49$$

$$\underline{\underline{(0, -49)}}$$

$$a, b) 0 = f(x) = 12x^2 - 11x + 2$$

$$0 = 12x^2 - 11x + 2$$

2
(1)(2)

$$0 = ((4)x - (1))((3)x - (2))$$

$$- (3)(1) - (4)(2)$$

$$0 = (4x-1)(3x-2)$$

$$\begin{array}{l} 4x-1=0 \\ +1 \quad +1 \\ \hline \end{array}$$

$$\begin{array}{l} 3x-2=0 \\ +2 \quad +2 \\ \hline \end{array}$$

$$\frac{4x}{4} = \frac{1}{4}$$

$$\frac{3x}{3} = \frac{2}{3}$$

$$x = \frac{1}{4}$$

$$x = \frac{2}{3}$$

$$\underline{\underline{(\frac{1}{4}, 0)}}$$

$$\underline{\underline{(\frac{2}{3}, 0)}}$$

$$c) f(0) = 12(0)^2 - 11(0) + 2$$

$$= 2$$

$$\underline{\underline{(0, 2)}}$$