

25E

1)  $(X-3)(X+3)$

$$\begin{array}{r} 2) \quad \begin{array}{r} X-3 \\ x \quad X+3 \\ \hline 3X-9 \\ X^2-3X \\ \hline X^2-9 \end{array} \end{array}$$

3)  $(X-Y)(X+Y)$

$$\begin{array}{r} 4) \quad \begin{array}{r} X-Y \\ x \quad X+Y \\ \hline XY-Y^2 \\ X^2-XY \\ \hline X^2-Y^2 \end{array} \end{array}$$

$$\begin{array}{r} 5) \quad \begin{array}{r} 2X^2 + X \quad R - 8 \\ X + 4 \overline{) 2X^3 + 9X^2 + 4X - 8} \\ \underline{-(2X^3 + 8X^2)} \\ \quad X^2 + 4X \\ \quad \underline{-(X^2 + 4X)} \\ \quad \quad 0 - 8 \end{array} \end{array}$$

$$\begin{array}{r} 6) \quad \begin{array}{r} 2X^2 + X \\ x \quad X + 4 \\ \hline 8X^2 + 4X \\ 2X^3 + X^2 \\ \hline 2X^3 + 9X^2 + 4X \\ \hline \quad \quad - 8 \\ \hline 2X^3 + 9X^2 + 4X - 8 \end{array} \end{array}$$

7)  $2X + 1$

8)  $4(10^2) + 4(10) + 1 = 441$

$$\begin{array}{r} \begin{array}{r} 2(10) + 1 \\ x \quad 2(10) + 1 \\ \hline 20 + 1 \\ 400 + 20 \\ \hline 400 + 40 + 1 = 441 \end{array} \end{array}$$

$$\begin{array}{r} 9) \quad \begin{array}{r} 85 \\ \hline 85 \\ 7225 \end{array} \end{array}$$

$$\begin{array}{r} 10) \quad \begin{array}{r} 59 \\ \hline 51 \\ 3009 \end{array} \end{array}$$

11)  $(X-6)(X-4)$

$$\begin{array}{r} 12) \quad \begin{array}{r} X-6 \\ x \quad X-4 \\ \hline -4X+24 \\ X^2-6X \\ \hline X^2-10X+24 \end{array} \end{array}$$

13)  $QX + QY + RX + RY$

$$\begin{array}{r} 14) \quad \begin{array}{r} \$ 5,000,000,000,000 \\ \hline 300,000,000 \\ \hline 50,000 \div 3 = \$16,667 \text{ (rounded)} \end{array} \end{array}$$

$$\begin{array}{r} 15) \quad \begin{array}{r} \$ 5,000,000,000,000 \\ \hline x \quad .08 \\ \hline \$ 400,000,000,000.00 \\ \$ 400 \text{ billion in interest each year} \end{array} \end{array}$$

16)  $300 \div 50 = 6 \text{ hours}$

17)  $300 \div 60 = 5 \text{ hours}$

18)  $6.5 \times 46 = 299 \text{ miles}$

$$\begin{array}{r} 19) \quad \begin{array}{r} 46 + 8 = 54 \text{ mph} \\ 299 \div 54 = 5.54 \text{ hrs. (rounded)} \end{array} \end{array}$$

$$\begin{array}{r} 20) \quad \begin{array}{r} 4R - 32R = 36R + 8XR \\ R - 8R = 9R + 2XR \\ 1 - 8 = 9 + 2X \\ -16 = 2X, \quad X = -8 \end{array} \end{array}$$

26A

1)  $(X^2-3)(X^2+3)$

$$\begin{array}{r} 2) \quad \begin{array}{r} (X^2 - Y^2)(X^2 + Y^2) \\ (X - Y)(X + Y)(X^2 + Y^2) \end{array} \end{array}$$

3)  $2X(X^2-8)$

$$\begin{array}{r} 4) \quad \begin{array}{r} (X^4 - Y^2)(X^4 + Y^2) \\ (X^2 - Y)(X^2 + Y)(X^4 + Y^2) \end{array} \end{array}$$

$$\begin{array}{r} 5) \quad \begin{array}{r} 2X(X^2 + 5X + 6) \\ 2X(X + 3)(X + 2) \end{array} \end{array}$$

$$\begin{array}{r} 6) \quad \begin{array}{r} 5X(X^2 + X - 6) \\ 5X(X + 3)(X - 2) \end{array} \end{array}$$

$$\begin{array}{r} 7) \quad \begin{array}{r} X(2X^2 + 11X + 5) \\ X(2X + 1)(X + 5) \end{array} \end{array}$$

8)  $3X(X-4)$

$$\begin{array}{r} 9) \quad \begin{array}{r} 2X(X^2 - 9) \\ 2X(X - 3)(X + 3) \end{array} \end{array}$$

$$\begin{array}{r} 10) \quad \begin{array}{r} 5X^2(X^2 - 4X - 5) \\ 5X^2(X - 5)(X + 1) \end{array} \end{array}$$

$$\begin{array}{r} 11) \quad \begin{array}{r} 4X(X^2 + 4X - 12) \\ 4X(X + 6)(X - 2) \end{array} \end{array}$$

$$\begin{array}{r} 12) \quad \begin{array}{r} 2(X^4 - 16) \\ 2(X^2 - 4)(X^2 + 4) \\ 2(X - 2)(X + 2)(X^2 + 4) \end{array} \end{array}$$

$$\begin{array}{r} 13) \quad \begin{array}{r} X(X^2 + 5X + 4) \\ X(X + 4)(X + 1) \end{array} \end{array}$$

$$\begin{array}{r} 14) \quad \begin{array}{r} 3X(X^2 + 2X - 3) \\ 3X(X + 3)(X - 1) \end{array} \end{array}$$

$$\begin{array}{r} 15) \quad \begin{array}{r} X(2X^2 + 7X - 4) \\ X(2X - 1)(X + 4) \end{array} \end{array}$$

$$\begin{array}{r} 16) \quad \begin{array}{r} 4X(X^2 - 4) \\ 4X(X - 2)(X + 2) \end{array} \end{array}$$

26B

$$\begin{array}{r} 1) \quad \begin{array}{r} X^2(X^2 - 9) \\ X^2(X - 3)(X + 3) \end{array} \end{array}$$

$$\begin{array}{r} 2) \quad \begin{array}{r} 3X(X^2 - 25) \\ 3X(X - 5)(X + 5) \end{array} \end{array}$$

$$\begin{array}{r} 3) \quad \begin{array}{r} 4X^2(X^2 - 1) \\ 4X^2(X - 1)(X + 1) \end{array} \end{array}$$

$$\begin{array}{r} 4) \quad \begin{array}{r} 5X(X^4 - 1) \\ 5X(X^2 - 1)(X^2 + 1) \\ 5X(X - 1)(X + 1)(X^2 + 1) \end{array} \end{array}$$

$$\begin{array}{r} 5) \quad \begin{array}{r} -2(X^2 + 8X + 15) \\ -2(X + 3)(X + 5) \end{array} \end{array}$$

$$\begin{array}{r} 6) \quad \begin{array}{r} 3X(X^2 + 3X - 10) \\ 3X(X + 5)(X - 2) \end{array} \end{array}$$

$$\begin{array}{r} 7) \quad \begin{array}{r} 5X(X^2 - X - 6) \\ 5X(X - 3)(X + 2) \end{array} \end{array}$$

$$\begin{array}{r} 8) \quad \begin{array}{r} X(X^2 + 11X + 30) \\ X(X + 6)(X + 5) \end{array} \end{array}$$

$$\begin{array}{r} 9) \quad \begin{array}{r} -4(X^2 + 7X + 10) \\ -4(X + 5)(X + 2) \end{array} \end{array}$$

$$\begin{array}{r} 10) \quad \begin{array}{r} -3X(X^2 + 8X + 12) \\ -3X(X + 6)(X + 2) \end{array} \end{array}$$

$$\begin{array}{r} 11) \quad \begin{array}{r} 2X(X^2 - 4X - 5) \\ 2X(X - 5)(X + 1) \end{array} \end{array}$$

$$\begin{array}{r} 12) \quad \begin{array}{r} X^3(5X^2 - X - 6) \\ X^3(5X - 6)(X + 1) \end{array} \end{array}$$

$$\begin{array}{r} 13) \quad \begin{array}{r} -3X(X^2 + 4X - 12) \\ -3X(X + 6)(X - 2) \end{array} \end{array}$$

$$\begin{array}{r} 14) \quad \begin{array}{r} X^2(X^2 + 3X - 4) \\ X^2(X + 4)(X - 1) \end{array} \end{array}$$

$$\begin{array}{r} 15) \quad \begin{array}{r} 4X(X^2 - 9) \\ 4X(X - 3)(X + 3) \end{array} \end{array}$$

$$\begin{array}{r} 16) \quad \begin{array}{r} 2X^2(X^2 - 16) \\ 2X^2(X - 4)(X + 4) \end{array} \end{array}$$

26C

$$1) (X^2 - 4)(X^2 + 4) \\ (X - 2)(X + 2)(X^2 + 4)$$

$$2) (10)^4 - 16 = (10 - 2)(10 + 2)(10^2 + 4) \\ 9984 = (8)(12)(104) \\ 9984 = 9984$$

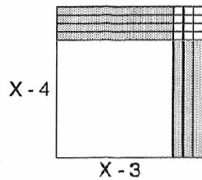
$$3) (4X - 3)(4X + 3)$$

$$4) 16(10)^2 - 9 = [4(10) - 3][4(10) + 3] \\ 1591 = (37)(43) \\ 1591 = 1591$$

$$5) \begin{array}{r} 3X - 8 \text{ R } 7 \\ X + 2 \overline{) 3X^2 - 2X - 9} \\ \underline{-(3X^2 + 6X)} \\ -8X - 9 \\ \underline{-(-8X - 16)} \\ 7 \end{array}$$

$$6) \begin{array}{r} 3X - 8 \\ x \quad X + 2 \\ \hline 6X - 16 \\ 3X^2 - 8X \\ \hline 3X^2 - 2X - 16 \\ \quad + 7 \\ \hline 3X^2 - 2X - 9 \end{array}$$

$$7) X^2 - 7X + 12$$



$$8) \begin{array}{r} X - 3 \\ x \quad X - 4 \\ \hline -4X + 12 \\ X^2 - 3X \\ \hline X^2 - 7X + 12 \end{array}$$

$$9) \begin{array}{r} 75 \\ \times 75 \\ \hline 5625 \end{array}$$

$$10) \begin{array}{r} 41 \\ \times 49 \\ \hline 2009 \end{array}$$

$$11) \begin{array}{r} 2(X^2 + 2X + 1) \\ 2(X + 1)(X + 1) \\ \hline \begin{array}{r} X + 1 \\ x \quad X + 1 \\ \hline X^2 + X \\ \hline X^2 + 2X + 1 \end{array} \end{array}$$

$$12) \begin{array}{r} 6(X^2 - 100) \\ 6(X - 10)(X + 10) \\ \hline \begin{array}{r} X - 10 \\ x \quad X + 10 \\ \hline 10X - 100 \\ X^2 - 10X \\ \hline X^2 - 100 \end{array} \end{array}$$

$$13) \begin{array}{l} 3Q = (7)(6) \\ 3Q = 42 \\ Q = 14 \end{array}$$

$$14) \begin{array}{l} (2)(36) = (9)(X) \\ 72 = 9X \\ 8 = X \end{array}$$

$$15) \begin{array}{l} 15 = 250Q - 440 \\ 455 = 250Q \\ 1.82 = Q \end{array}$$

$$16) \begin{array}{l} -4X + 5X = 43 + 16 \\ X = 59 \end{array}$$

$$17) 4 \times 10^4 + 9 \times 10^3 + 7 \times 10^2 + 3 \times 10^0$$

$$18) .01 + .0005 = .0105$$

$$19) \begin{array}{l} 12(N + 1) + 4(N) = 9(N + 2) + 8 \\ 12N + 12 + 4N = 9N + 18 + 8 \\ 7N = 14 \\ N = 2 \quad 2, 3, 4 \end{array}$$

$$20) (2X)(A + 4) + (3)(A + 4) = \\ (2AX + 8X) + (3A + 12)$$

26D

$$1) \begin{array}{l} X(X^2 - 9) \\ X(X - 3)(X + 3) \end{array}$$

$$2) (10)^3 - 9(10) = 10(10 - 3)(10 + 3) \\ 910 = 10(7)(13) \\ 910 = 910$$

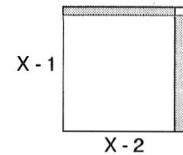
$$3) (X^2 - 9)(X^2 + 9) \\ (X - 3)(X + 3)(X^2 + 9)$$

$$4) (10)^4 - 81 = (10 - 3)(10 + 3)(10^2 + 9) \\ 9919 = (7)(13)(109) \\ 9919 = 9919$$

$$5) \begin{array}{r} 2X - 1 \text{ R } -11 \\ X - 3 \overline{) 2X^2 - 7X - 8} \\ \underline{-(2X^2 - 6X)} \\ -X - 8 \\ \underline{-(-X + 3)} \\ -11 \end{array}$$

$$6) \begin{array}{r} 2X - 1 \\ x \quad X - 3 \\ \hline -6X + 3 \\ 2X^2 - X \\ \hline 2X^2 - 7X + 3 \\ \quad -11 \\ \hline 2X^2 - 7X - 8 \end{array}$$

$$7) X^2 - 3X + 2$$



$$8) \begin{array}{r} X - 1 \\ x \quad X - 2 \\ \hline -2X + 2 \\ X^2 - X \\ \hline X^2 - 3X + 2 \end{array}$$

$$9) \begin{array}{r} 95 \\ \times 95 \\ \hline 9025 \end{array}$$

$$10) \begin{array}{r} 24 \\ \times 26 \\ \hline 624 \end{array}$$

$$11) \begin{array}{r} 5(X^2 - 9) \\ 5(X - 3)(X + 3) \\ \hline \begin{array}{r} X - 3 \\ x \quad X + 3 \\ \hline 3X - 9 \\ X^2 - 3X \\ \hline X^2 - 9 \end{array} \end{array}$$

$$12) \begin{array}{r} 4(X^2 - 81) \\ 4(X - 9)(X + 9) \\ \hline \begin{array}{r} X - 9 \\ x \quad X + 9 \\ \hline -9X - 81 \\ X^2 + 9X \\ \hline X^2 - 81 \end{array} \end{array}$$

$$13) \begin{array}{l} (4)(110) = 11P \\ 440 = 11P \\ 40 = P \end{array}$$

$$14) \begin{array}{l} (5)(15) = 8C \\ 75 = 8C \\ 9\frac{3}{8} = C \end{array}$$

$$15) -5Y + 3 = 8Y - 4 \text{ (after dividing all terms by } 10B) \\ 3 + 4 = 8Y + 5Y \\ 7 = 13Y \\ 7/13 = Y$$

$$16) \begin{array}{l} 207 - 90X = 500X + 83 \\ 124 = 590X \\ 62/295 = X \end{array}$$

$$17) .25Q + .10D = 2.30 \quad Q + D = 14$$

$$\begin{array}{l} 25Q + 10D = 230 \\ -10Q - 10D = -140 \\ \hline 15Q = 90 \quad (6) + D = 14 \\ Q = 6 \quad D = 8 \end{array}$$

$$18) 4.2 \times 180 = 756 \text{ miles}$$

$$19) 180 - 30 = 150 \text{ mph} \\ 756 \div 150 = 5.04 \text{ hours}$$

$$20) (X + A)(C + B) = \\ (X)(C + B) + (A)(C + B)$$

26E

$$1) \begin{aligned} X^2(X^2 - 25) \\ X^2(X - 5)(X + 5) \end{aligned}$$

$$2) (10)^4 - 25(10)^2 = (10^2)(10 - 5)(10 + 5) \\ 7500 = (100)(5)(15) \\ 7500 = 7500$$

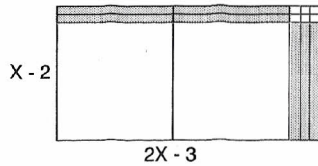
$$3) \begin{aligned} 5X(X^2 - 9) \\ 5X(X - 3)(X + 3) \end{aligned}$$

$$4) 5(10)^3 - 45(10) = 5(10)(10 - 3)(10 + 3) \\ 4550 = 5(10)(7)(13) \\ 4550 = 4550$$

$$5) \begin{array}{r} 2X - 7 \text{ R } 29 \\ X + 4 \overline{) 2X^2 + X + 1} \\ \underline{-(2X^2 + 8X)} \phantom{+ 1} \\ -7X + 1 \\ \underline{-(-7X - 28)} \\ 29 \end{array}$$

$$6) \begin{array}{r} 2X - 7 \\ x \overline{) X + 4} \\ \underline{8X - 28} \\ 2X^2 - 7X \\ \underline{2X^2 + X - 28} \\ + 29 \\ 2X^2 + X + 1 \end{array}$$

$$7) 2X^2 - 7X + 6$$



$$8) \begin{array}{r} 2X - 3 \\ x \overline{) X - 2} \\ \underline{-4X + 6} \\ 2X^2 - 3X \\ \underline{2X^2 - 7X + 6} \end{array}$$

$$9) \begin{array}{r} 25 \\ \underline{25} \\ 625 \end{array}$$

$$10) \begin{array}{r} 32 \\ \underline{38} \\ 1216 \end{array}$$

$$11) \begin{aligned} (12)(8) &= 72A \\ 96 &= 72A \\ 1 \frac{1}{3} &= A \end{aligned}$$

$$12) \begin{aligned} 5Y &= (20)(12) \\ 5Y &= 240 \\ Y &= 48 \end{aligned}$$

$$13) \begin{aligned} -35Y + 55Y &= 220 \\ 20Y &= 220 \\ Y &= 11 \end{aligned}$$

$$14) \begin{aligned} WF \times 100 &= 1 \\ WF &= 1/100 \end{aligned}$$

$$15) 3 \times 10^{-2} + 7 \times 10^{-3} + 8 \times 10^{-4}$$

$$16) 2,000,000 + 60,000 + 1,000 = 2,061,000$$

$$17) \begin{aligned} 2(N) + 2(N + 2) - 5 &= 7 + (N + 4) \\ 2N + 2N + 4 - 5 &= 7 + N + 4 \\ 3N &= 12 \\ N &= 4, 4, 6, 8 \end{aligned}$$

$$18) 442 \div 52 = 8.5 \text{ hours}$$

$$19) 1 \times 212 = 212 \text{ miles}$$

$$20) \begin{aligned} (3X)(X + 3) + 2(X + 3) &= \\ (3X^2 + 9X) + (2X + 6) &= \end{aligned}$$

27A

$$1) (X - 5)(X + 3) = 0$$

$$2) \begin{aligned} X - 5 &= 0 & X + 3 &= 0 \\ X &= 5 & X &= -3 \end{aligned}$$

$$3) \begin{aligned} (5)^2 - 2(5) - 15 &= 0 & (-3)^2 - 2(-3) - 15 &= 0 \\ 25 - 10 - 15 &= 0 & 9 + 6 - 15 &= 0 \\ 0 &= 0 & 0 &= 0 \end{aligned}$$

$$4) X(X - 2)(X - 1) = 0$$

$$5) \begin{aligned} X - 2 &= 0 & X - 1 &= 0 \\ X &= 2 & X &= 1 \end{aligned}$$

$$6) \begin{aligned} (0)^3 - 3(0)^2 + 2(0) &= 0 & (2)^3 - 3(2)^2 + 2(2) &= 0 \\ 0 &= 0 & 8 - 12 + 4 &= 0 \\ & & 0 &= 0 \end{aligned}$$

$$\begin{aligned} (1)^3 - 3(1)^2 + 2(1) &= 0 \\ 1 - 3 + 2 &= 0 \\ 0 &= 0 \end{aligned}$$

$$7) X(X - 1)(X + 1) = 0$$

$$8) \begin{aligned} X - 1 &= 0 & X + 1 &= 0 \\ X &= 1 & X &= -1 \end{aligned}$$

$$9) \begin{aligned} (0)^3 - (0) &= 0 & (1)^3 - (1) &= 0 \\ 0 &= 0 & 1 - 1 &= 0 \\ & & 0 &= 0 \end{aligned}$$

$$\begin{aligned} (-1)^3 - (-1) &= 0 \\ -1 - 1 &= 0 \\ 0 &= 0 \end{aligned}$$

$$10) (2X - 1)(X - 3) = 0$$

$$11) \begin{aligned} 2X - 1 &= 0 & X - 3 &= 0 \\ X &= 1/2 & X &= 3 \end{aligned}$$

$$12) \begin{aligned} 2(1/2)^2 - 7(1/2) + 3 &= 0 \\ 2(1/4) - 7/2 + 3 &= 0 \\ 1/2 - 7/2 + 3 &= 0 \\ 0 &= 0 \end{aligned}$$

$$\begin{aligned} 2(3)^2 - 7(3) + 3 &= 0 \\ 18 - 21 + 3 &= 0 \\ 0 &= 0 \end{aligned}$$

27B

$$1) \begin{aligned} X^2 + X - 56 &= 0 \\ (X + 8)(X - 7) &= 0 \end{aligned}$$

$$2) \begin{aligned} X + 8 &= 0 & X - 7 &= 0 \\ X &= -8 & X &= 7 \end{aligned}$$

$$3) \begin{aligned} (-8)^2 + (-8) &= 56 & (7)^2 + (7) &= 56 \\ 64 - 8 &= 56 & 49 + 7 &= 56 \\ 56 &= 56 & 56 &= 56 \end{aligned}$$

$$4) (X - 5)(X - 6) = 0$$

$$5) \begin{aligned} X - 5 &= 0 & X - 6 &= 0 \\ X &= 5 & X &= 6 \end{aligned}$$

$$6) \begin{aligned} (5)^2 - 11(5) + 30 &= 0 & (6)^2 - 11(6) + 30 &= 0 \\ 25 - 55 + 30 &= 0 & 36 - 66 + 30 &= 0 \\ 0 &= 0 & 0 &= 0 \end{aligned}$$

$$7) (X - 7)(X - 8) = 0$$

$$8) \begin{aligned} X - 7 &= 0 & X - 8 &= 0 \\ X &= 7 & X &= 8 \end{aligned}$$

$$9) \begin{aligned} (7)^2 - 15(7) + 56 &= 0 & (8)^2 - 15(8) + 56 &= 0 \\ 49 - 105 + 56 &= 0 & 64 - 120 + 56 &= 0 \\ 0 &= 0 & 0 &= 0 \end{aligned}$$

$$10) (X - 5)(X - 8) = 0$$

$$11) \begin{aligned} X - 5 &= 0 & X - 8 &= 0 \\ X &= 5 & X &= 8 \end{aligned}$$

$$12) \begin{aligned} (5)^2 - 13(5) + 40 &= 0 \\ 25 - 65 + 40 &= 0 \\ 0 &= 0 \end{aligned}$$

$$\begin{aligned} (8)^2 - 13(8) + 40 &= 0 \\ 64 - 104 + 40 &= 0 \\ 0 &= 0 \end{aligned}$$