25E

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

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

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

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

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

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

7) $2X + 1$

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

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

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

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

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

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

13) $QX + QY + RX + RY$

14) $\$\ 5,000,000,000,000$

$300,000,000$

$50,000 \div 3 = \$16,667$ (rounded)

15)
$$\begin{array}{r} \$\ 5,000,000,000,000 \\ \times\ .08 \\ \hline \$\ 400,000,000,000.00 \end{array}$$

$400 billion in interest each year

16) $300 \div 50 = 6$ hours

17) $300 \div 60 = 5$ hours

18) $6.5 \times 46 = 299$ miles

19) $46 + 8 = 54$ mph
$299 \div 54 = 5.54$ hrs. (rounded)

20) $4R - 32R = 36R + 8XR$
$R - 8R = 9R + 2XR$
$1 - 8 = 9 + 2X$
$-16 = 2X, \quad X = -8$

26A

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

2) $(X^2 - Y^2)(X^2 + Y^2)$
$(X - Y)(X + Y)(X^2 + Y^2)$

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

4) $(X^4 - Y^2)(X^4 + Y^2)$
$(X^2 - Y)(X^2 + Y)(X^4 + Y^2)$

5) $2X(X^2 + 5X + 6)$
$2X(X + 3)(X + 2)$

6) $5X(X^2 + X - 6)$
$5X(X + 3)(X - 2)$

7) $X(2X^2 + 11X + 5)$
$X(2X + 1)(X + 5)$

8) $3X(X - 4)$

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

10) $5X^2(X^2 - 4X - 5)$
$5X^2(X - 5)(X + 1)$

11) $4X(X^2 + 4X - 12)$
$4X(X + 6)(X - 2)$

12) $2(X^4 - 16)$
$2(X^2 - 4)(X^2 + 4)$
$2(X - 2)(X + 2)(X^2 + 4)$

13) $X(X^2 + 5X + 4)$
$X(X + 4)(X + 1)$

14) $3X(X^2 + 2X - 3)$
$3X(X + 3)(X - 1)$

15) $X(2X^2 + 7X - 4)$
$X(2X - 1)(X + 4)$

16) $4X(X^2 - 4)$
$4X(X - 2)(X + 2)$

26B

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

2) $3X(X^2 - 25)$
$3X(X - 5)(X + 5)$

3) $4X^2(X^2 - 1)$
$4X^2(X - 1)(X + 1)$

4) $5X(X^4 - 1)$
$5X(X^2 - 1)(X^2 + 1)$
$5X(X - 1)(X + 1)(X^2 + 1)$

5) $-2(X^2 + 8X + 15)$
$-2(X + 3)(X + 5)$

6) $3X(X^2 + 3X - 10)$
$3X(X + 5)(X - 2)$

7) $5X(X^2 - X - 6)$
$5X(X - 3)(X + 2)$

8) $X(X^2 + 11X + 30)$
$X(X + 6)(X + 5)$

9) $-4(X^2 + 7X + 10)$
$-4(X + 5)(X + 2)$

10) $-3X(X^2 + 8X + 12)$
$-3X(X + 6)(X + 2)$

11) $2X(X^2 - 4X - 5)$
$2X(X - 5)(X + 1)$

12) $X^3(5X^2 - X - 6)$
$X^3(5X - 6)(X + 1)$

13) $-3X(X^2 + 4X - 12)$
$-3X(X + 6)(X - 2)$

14) $X^2(X^2 + 3X - 4)$
$X^2(X + 4)(X - 1)$

15) $4X(X^2 - 9)$
$4X(X - 3)(X + 3)$

16) $2X^2(X^2 - 16)$
$2X^2(X - 4)(X + 4)$

26C

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

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

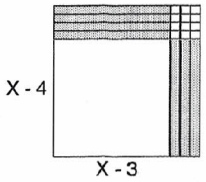
3) $(4X - 3)(4X + 3)$

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

5)
$$X + 2 \overline{)\,3X^2 - 2X - 9}\quad 3X - 8 \text{ R } 7$$
$-(3X^2 + 6X)$
$-8X - 9$
$-(-8X - 16)$
7

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

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



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

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

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

11) $2(X^2 + 2X + 1)$
$2(X + 1)(X + 1)$

$$\begin{array}{r} X + 1 \\ \times\ X + 1 \\ \hline X + 1 \\ X^2 + X \\ \hline X^2 + 2X + 1 \end{array}$$

12) $6(X^2 - 100)$
$6(X - 10)(X + 10)$

$$\begin{array}{r} X - 10 \\ \times\ X + 10 \\ \hline 10X - 100 \\ X^2 - 10X \\ \hline X^2 - 100 \end{array}$$

13) $3Q = (7)(6)$
$3Q = 42$
$Q = 14$

14) $(2)(36) = (9)(X)$
$72 = 9X$
$8 = X$

15) $15 = 250Q - 440$
$455 = 250Q$
$1.82 = Q$

16) $-4X + 5X = 43 + 16$
$X = 59$

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

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

19) $12(N + 1) + 4(N) = 9(N + 2) + 8$
$12N + 12 + 4N = 9N + 18 + 8$
$7N = 14$
$N = 2 \qquad 2, 3, 4$

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

26D

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

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

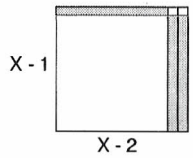
3) $(X^2 - 9)(X^2 + 9)$
$(X - 3)(X + 3)(X^2 + 9)$

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

5)
$$X - 3 \overline{)\,2X^2 - 7X - 8}\quad 2X - 1 \text{ R } -11$$
$-(2X^2 - 6X)$
$-X - 8$
$-(-X + 3)$
-11

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

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



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

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

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

11) $5(X^2 - 9)$
$5(X - 3)(X + 3)$

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

12) $4(X^2 - 81)$
$4(X - 9)(X + 9)$

$$\begin{array}{r} X - 9 \\ \times\ X + 9 \\ \hline -9X - 81 \\ X^2 + 9X \\ \hline X^2 - 81 \end{array}$$

13) $(4)(110) = 11P$
$440 = 11P$
$40 = P$

14) $(5)(15) = 8C$
$75 = 8C$
$9\ 3/8 = C$

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

16) $207 - 90X = 500X + 83$
$124 = 590X$
$62/295 = X$

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

$$\begin{array}{r} 25Q + 10D = 230 \\ -10Q - 10D = -140 \\ \hline 15Q \quad = \quad 90 \end{array}$$

$Q = 6 \qquad (6) + D = 14$
$D = 8$

18) $4.2 \times 180 = 756$ miles

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

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

26E

1) $X^2(X^2 - 25)$
$X^2(X - 5)(X + 5)$

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

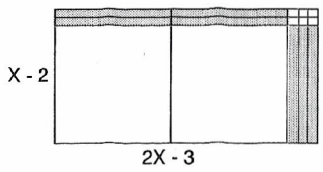
3) $5X(X^2 - 9)$
$5X(X - 3)(X + 3)$

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

5)
$$X + 4 \overline{)\, 2X^2 + X + 1}$$
$$2X - 7 \text{ R } 29$$
$$-(2X^2 + 8X)$$
$$-7X + 1$$
$$-(-7X - 28)$$
$$29$$

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

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



8)
$$\begin{array}{r} 2X - 3 \\ \times\ X - 2 \\ \hline -4X + 6 \end{array}$$
$$\begin{array}{r} 2X^2 - 3X \\ \hline 2X^2 - 7X + 6 \end{array}$$

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

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

11) $(12)(8) = 72A$
$96 = 72A$
$1\ 1/3 = A$

12) $5Y = (20)(12)$
$5Y = 240$
$Y = 48$

13) $-35Y + 55Y = 220$
$20Y = 220$
$Y = 11$

14) $WF \times 100 = 1$
$WF = 1/100$

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) $2(N) + 2(N + 2) - 5 = 7 + (N + 4)$
$2N + 2N + 4 - 5 = 7 + N + 4$
$3N = 12$
$N = 4 \quad 4, 6, 8$

18) $442 \div 52 = 8.5$ hours

19) $1 \times 212 = 212$ miles

20) $(3X)(X + 3) + 2(X + 3) =$
$(3X^2 + 9X) + (2X + 6)$

27A

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

2) $X - 5 = 0 \qquad X + 3 = 0$
$X = 5 \qquad X = -3$

3) $(5)^2 - 2(5) - 15 = 0 \qquad (-3)^2 - 2(-3) - 15 = 0$
$25 - 10 - 15 = 0 \qquad 9 + 6 - 15 = 0$
$0 = 0 \qquad 0 = 0$

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

5) $X - 2 = 0 \qquad X - 1 = 0$
$X = 0 \qquad X = 2 \qquad X = 1$

6) $(0)^3 - 3(0)^2 + 2(0) = 0 \qquad (2)^3 - 3(2)^2 + 2(2) = 0$
$0 = 0 \qquad 8 - 12 + 4 = 0$
$0 = 0$
$(1)^3 - 3(1)^2 + 2(1) = 0$
$1 - 3 + 2 = 0$
$0 = 0$

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

8) $X - 1 = 0 \qquad X + 1 = 0$
$X = 0 \qquad X = 1 \qquad X = -1$

9) $(0)^3 - (0) = 0 \qquad (1)^3 - (1) = 0$
$0 = 0 \qquad 1 - 1 = 0$
$0 = 0$
$(-1)^3 - (-1) = 0$
$-1 - 1 = 0$
$0 = 0$

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

11) $2X - 1 = 0 \qquad X - 3 = 0$
$X = 1/2 \qquad X = 3$

12) $2(1/2)^2 - 7(1/2) + 3 = 0$
$2(1/4) - 7/2 + 3 = 0$
$1/2 - 7/2 + 3 = 0$
$0 = 0$

$2(3)^2 - 7(3) + 3 = 0$
$18 - 21 + 3 = 0$
$0 = 0$

27B

1) $X^2 + X - 56 = 0$
$(X + 8)(X - 7) = 0$

2) $X + 8 = 0 \qquad X - 7 = 0$
$X = -8 \qquad X = 7$

3) $(-8)^2 + (-8) = 56 \qquad (7)^2 + (7) = 56$
$64 - 8 = 56 \qquad 49 + 7 = 56$
$56 = 56 \qquad 56 = 56$

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

5) $X - 5 = 0 \qquad X - 6 = 0$
$X = 5 \qquad X = 6$

6) $(5)^2 - 11(5) + 30 = 0 \qquad (6)^2 - 11(6) + 30 = 0$
$25 - 55 + 30 = 0 \qquad 36 - 66 + 30 = 0$
$0 = 0 \qquad 0 = 0$

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

8) $X - 7 = 0 \qquad X - 8 = 0$
$X = 7 \qquad X = 8$

9) $(7)^2 - 15(7) + 56 = 0 \qquad (8)^2 - 15(8) + 56 = 0$
$49 - 105 + 56 = 0 \qquad 64 - 120 + 56 = 0$
$0 = 0 \qquad 0 = 0$

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

11) $X - 5 = 0 \qquad X - 8 = 0$
$X = 5 \qquad X = 8$

12) $(5)^2 - 13(5) + 40 = 0$
$25 - 65 + 40 = 0$
$0 = 0$

$(8)^2 - 13(8) + 40 = 0$
$64 - 104 + 40 = 0$
$0 = 0$