

$$\textcircled{1} P_1(x_1, y_1), P_2(x_2, y_2)$$

$$d(P_1, P_2) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\textcircled{2} P_1(7, 3), P_2(10, 5)$$

$x_1 \quad y_1 \qquad x_2 \quad y_2$

$$\begin{aligned} M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right) &= M\left(\frac{7 + 10}{2}, \frac{3 + 5}{2}\right) \\ &= M\left(\frac{17}{2}, 4\right) \end{aligned}$$

$$\begin{aligned} \textcircled{7} & \left\{ \underline{(1, 4)}, \underline{(5, 5)}, (7, 9), \underline{(1, -3)}, \underline{(5, -4)} \right\} \\ & \left\{ \underline{(1, 4)}, \underline{(5, 5)}, (7, 9), \underline{(1, 4)}, (6, 10) \right\} \\ & = \left\{ (1, 4), (5, 5), (7, 9), (6, 10) \right\} \end{aligned}$$

$$\textcircled{10} f(x) = 6x^2 - 6x + 6$$

$$x = -8 : 6 \cdot (-8)^2 - 6 \cdot (-8) + 6 = 6 \cdot (64) + 48 + 6 = 384 + 48 + 6 = \underline{\underline{438}}$$

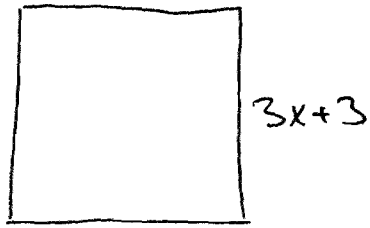
$$x = -4 : 6 \cdot (-4)^2 - 6 \cdot (-4) + 6 = 6 \cdot (16) + 24 + 6 = 96 + 24 + 6 = \underline{\underline{126}}$$

$$x = 0 : 6 \cdot (0)^2 - 6 \cdot (0) + 6 = \underline{\underline{6}}$$

$$\begin{aligned} x = 8 : 6 \cdot (8)^2 - 6 \cdot (8) + 6 &= 6 \cdot (64) - 48 + 6 \\ &= 384 - 48 + 6 \\ &= \underline{\underline{342}} \end{aligned}$$

39, 78

39



$$A = S^2 = (3x+3)^2 = 9x^2 + 18x + 9$$

$$L = (3x+3)(3x+3)$$

$$\underline{(a+b)^2 = a^2 + 2ab + b^2}$$

$$(3x+3)^2 = (3x+3)(3x+3)$$

78

$$b^2 + 9b + 18 = 0$$

$$\begin{array}{l} \rightarrow P=18 \parallel 6, 3 \\ \rightarrow S=9 \end{array}$$

$$(b+6)(b+3) = 0$$

$$\begin{array}{l} \downarrow \\ b+6=0 \\ \underline{b=-6} \end{array}$$

$$\begin{array}{l} \downarrow \\ b+3=0 \\ \underline{b=-3} \end{array}$$

$$\textcircled{4} \quad \{(-5,1), (-2,1), (1,1), (2,1), (3,1)\}$$

FCT, (A)

$$\textcircled{9} \quad s(t) = -16t^2 + 96t$$

$$s(2) = -16(2)^2 + 96 \cdot (2)$$

$$= -16 \cdot (4) + 192$$

$$= -64 + 192$$

$$= 128$$

$$\textcircled{12} \quad (-9x^2 + 5x + 2) + (5x^2 + 4x - 6)$$

$$= \underline{-9x^2} + \underline{5x} + \underline{2} + \underline{5x^2} + \underline{4x} - \underline{6}$$

$$= -4x^2 + 9x - 4$$

$$\textcircled{14} \quad (-u^2 + 4u) - (-u^2 + 3u)$$

$$= \underline{-u^2} + \underline{4u} + \underline{u^2} - \underline{3u}$$

$$= u$$

$$\textcircled{17} \quad (-5y^3z)(-4y^2z^2)(-yz^4)$$

$$= -20 y^{3+2+1} z^{1+2+4}$$

$$= -20 y^6 z^7$$

19

$$\begin{aligned}(-y^8)^6 &= (-1 \cdot y^8)^6 \\ &= (-1)^6 \cdot y^{8 \cdot 6} \\ &= 1 \cdot y^{48} \\ &= y^{48}\end{aligned}$$

$$(x^m \cdot y^n)^p = x^{m \cdot p} \cdot y^{n \cdot p}$$

22

$$y^n \cdot y^{5n} = y^{n+5n} = y^{6n}$$

40

$$\frac{4^{-4}}{4^1} = 4^{-4-1} = 4^{-5} = \frac{1}{4^5} = \frac{1}{1024}$$

41

$$\frac{15w^6}{35w^4} = \frac{\overset{3}{\cancel{15}} \cdot w^6}{\underset{7}{\cancel{35}} \cdot w^4} = \frac{3}{7} w^{6-4} = \frac{3}{7} w^2$$

43

$$\begin{aligned}\frac{3c^{-2}y^{-5}}{10c^8y^9} &= \frac{3}{10} \cdot \frac{c^{-2}}{c^8} \cdot \frac{y^{-5}}{y^9} = \frac{3}{10} \cdot c^{-2-8} \cdot y^{-5-9} \\ &= \frac{3}{10} c^{-10} y^{-14} = \frac{3}{10c^{10} \cdot y^{14}}\end{aligned}$$

27

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

$$= 9y^4 - \underline{3y^3} + \underline{12y^3} - 4y^2 + 9y - 3$$

$$= 9y^4 + 9y^3 - 4y^2 + 9y - 3$$

44

$$0.0059 = 5.9 \cdot 10^{-3}$$

45

$$0.00044 = 4.4 \cdot 10^{-4}$$

46

$$5.7 \times 10^{10} = 57,000,000,000.$$

53

$$\underline{bz + 7b} - \underline{2z - 14}$$

$$= b(\underline{z + 7}) - 2(\underline{z + 7})$$

$$= (z + 7)(b - 2)$$

58

$$4c^2 - 29c - 24$$

$$\begin{array}{l} \text{P} = -96 \\ \text{S} = -29 \end{array}$$

$$\parallel -32, 3$$

$$\underline{4c^2 - 32c} + \underline{3c - 24}$$

$$= 4c(c - 8) + 3(c - 8)$$

$$= (c - 8)(4c + 3)$$

(60)

$$\begin{aligned}
 & 8 - 7r - r^2 \\
 &= -r^2 - 7r + 8 \\
 &= -(r^2 + 7r - 8) \\
 & \quad \quad \quad \begin{array}{l} \swarrow \quad \searrow \\ \quad \quad \quad \rightarrow P = -8 \quad || \quad 8, -1 \\ \quad \quad \quad \rightarrow S = 7 \end{array}
 \end{aligned}$$

$$= -(r+8)(r-1) = (r+8)(1-r)$$

(64)

~~$49x^2 + 6$~~

$$24w^3x - 66w^2x^2 + 45wx^3$$

$$\text{GCF} = 3wx$$

$$= 3wx(8w^2 - 22wx + 15x^2)$$

$$\begin{array}{l} \swarrow \quad \searrow \\ \quad \quad \quad \rightarrow P = 120 \\ \quad \quad \quad \rightarrow S = -22 \quad || \quad -10, -12 \end{array}$$

$$\begin{array}{l}
 \frac{8w^2 - 10wx}{2w} \quad \frac{-12wx + 15x^2}{-3x} \\
 \underline{2w(4w - 5x)} \quad \underline{-3x(4w - 5x)} \\
 (4w - 5x)(2w - 3x)
 \end{array}$$

$$= 3wx(4w - 5x)(2w - 3x)$$

$$(66) \quad 4y^2 - 25$$

$$(2y)^2 - (5)^2 = (2y - 5)(2y + 5)$$

$$(73) \quad 2b^2 - 32 = 2(b^2 - 16)$$

$$= 2(b^2 - 4^2)$$

$$= 2(b - 4)(b + 4)$$

$$(75) \quad a^{2n+2} - 6a^{n+2} + 9a^2$$

$$= a^2(a^{2n} - 6a^n + 9)$$

$$= a^2((a^n)^2 - 6a^n + 3^2)$$

$$= a^2(a^n - 3)^2$$

$$(78) \quad b^2 + 9b + 18 = 0$$

$$\begin{array}{l} \text{P} = 18 \\ \text{S} = 9 \end{array} \parallel 6, 3$$

$$(b + 6)(b + 3) = 0$$

$$\downarrow \\ b + 6 = 0$$

$$b = -6$$

$$\downarrow \\ b + 3 = 0$$

$$b = -3$$

$$(79) \quad b^2 - 2b = 0$$

$$b(b-2) = 0$$

$$b = 0$$

$$b - 2 = 0$$

$$b = 2$$

$$(81) \quad f(x) = x^2 - 3x - 40$$

$$x^2 - 3x - 40 = 0$$

$$\begin{array}{l} \text{P} = -40 \\ \text{S} = -3 \end{array} \parallel -8,5$$

$$(x-8)(x+5) = 0$$

$$x - 8 = 0$$

$$x = 8$$

$$x + 5 = 0$$

$$x = -5$$



3

$$\frac{1.46 - 1.13}{2001 - 1992} = \frac{0.33}{9} = \frac{33}{900}$$

$$\begin{array}{r} 1.46 \\ - 1.13 \\ \hline 0.33 \end{array}$$

$$= \frac{11}{300}$$

$$= 0.036$$

$$\approx \underline{\underline{0.037}}$$

$$300 \overline{) \begin{array}{r} 0.036 \\ 1100 \\ 900 \\ \hline 2000 \end{array}}$$

11

$$\underline{2}x^2 + \underline{9}x + \underline{5} + \underline{5}x^2 + \underline{6}x - \underline{7}$$

$$= \underline{\underline{7x^2 + 15x - 2}}$$

9

$$s(t) = -16t^2 + 96t$$

$$t=2 \quad s(2) = -16 \cdot (2)^2 + 96 \cdot (2)$$

$$= -16 \cdot (4) + 96 \cdot (2)$$

$$= -64 + 192$$

$$= 128$$

$$\textcircled{5} \quad \{(\underline{-3}, \underline{1}), (\underline{-2}, \underline{4}), (\underline{2}, \underline{7}), (\underline{4}, \underline{-7})\} \rightarrow \text{DOMAIN} = \{-3, -2, 2, 4\}$$

$$\textcircled{6} \quad \{(\underline{-5}, \underline{2}), (\underline{-1}, \underline{4}), (\underline{1}, \underline{8}), (\underline{2}, \underline{-8})\} \rightarrow \text{RANGE} = \{2, 4, 8, -8\}$$

$$= \{-8, 2, 4, 8\}$$

$$\textcircled{16} \quad (-5x^3z^3)(-2x^7z^2)$$

$$= 10x^{10}z^5$$

$$\textcircled{26} \quad (x^2 - 5x + 6)(x - 2)$$

$$= x^2 \cdot x + x^2 \cdot (-2)$$

$$- 5x \cdot x - 5x \cdot (-2)$$

$$+ 6 \cdot x + 6 \cdot (-2)$$

$$= x^3 - \underline{2x^2} - \underline{5x^2} + \underline{10x} + \underline{6x} - 12$$

$$= x^3 - 7x^2 + 16x - 12$$

$$\textcircled{13} \quad (5x^2 + 7x + 2) - (3x^2 - 3x + 9)$$

$$= \underline{5x^2} + \underline{7x} + \underline{2} - \underline{3x^2} + \underline{3x} - \underline{9}$$

$$= 2x^2 + 10x - 7$$

$$\textcircled{25}$$

$$k^4(3k^2 - 3k + 7) = k^4 \cdot 3k^2 - k^4 \cdot 3k + k^4 \cdot 7$$

$$= 3k^6 - 3k^5 + 7k^4$$

$$\textcircled{1} (2x-3y)^2$$

$$\textcircled{11} = (2x-3y)(2x-3y)$$

$$= (2x) \cdot (2x) + (2x)(-3y) - 3y \cdot (2x) - 3y(-3y)$$

$$= 4x^2 - \underline{6xy} - \underline{6xy} + 9y^2$$

$$= 4x^2 - 12xy + 9y^2$$

$$\textcircled{12} \underbrace{(2x-3y)^2}_{\substack{a \\ b}}$$

$$(a-b)^2 = a^2 - 2ab + b^2$$

$$= \underline{\underline{4x^2 - 12xy + 9y^2}}$$

$$\textcircled{51} 6a^2b^2 - 24ab^2 + 12b^2$$

$$\text{GCF} = 6b^2$$

$$= \underline{\underline{(6b^2)}} \cdot a^2 - \underline{\underline{(6b^2)}} \cdot 4a + \underline{\underline{(6b^2)}} \cdot 2$$

$$= \underline{\underline{(6b^2)}} (a^2 - 4a + 2)$$

$$\begin{array}{l} \text{---} \rightarrow \\ \text{---} \rightarrow \end{array} \begin{array}{l} S = -4 \\ P = 2 \end{array} \parallel \text{NO NUMBERS}$$



(68)

$$81c^2 + 36cx + 4x^2$$

$9c \cdot 4x = 36cx$

NON FACTORABLE

(75)

$$a^{2n+2} - 6a^{n+2} + 9a^2$$

$$= a^{2n} \cdot \underline{\underline{a^2}} - 6a^n \cdot \underline{\underline{a^2}} + 9\underline{\underline{a^2}}$$

$$= a^2 (a^{2n} - 6a^n + 9)$$

$a^n \cdot 3$

$$= \underline{\underline{a^2 (a^n - 3)^2}}$$

(71)

$$\frac{125x^3 - 8y^3}{(5x)^3 - (2y)^3} = \underline{\underline{(5x-2y)(25x^2 + 10xy + 4y^2)}}$$