

$$\textcircled{1} 0.02 \times 1.25 = 0.02 + 0.005 = \underline{0.025} \quad \textcircled{B}$$

$$\textcircled{2} 3 \left( \frac{30}{72} + \frac{27}{72} \right) = 3 \left( \frac{57}{72} \right) = \frac{171}{72} = \frac{19}{8} \quad \textcircled{D}$$

$$\textcircled{3} \frac{1}{\sqrt{2} + \sqrt{3}} \frac{(\sqrt{2} - \sqrt{3})}{(\sqrt{2} - \sqrt{3})} = \frac{\sqrt{2} - \sqrt{3}}{2 - 3} = \frac{\sqrt{2} - \sqrt{3}}{-1} = -\sqrt{2} + \sqrt{3} \quad \textcircled{D}$$

$$\textcircled{4} \frac{x - \frac{1}{y}}{\frac{x}{y}} = \frac{xy - 1}{y} \cdot \frac{y}{x} = \frac{xy - 1}{x} \quad \textcircled{E}$$

$$\textcircled{5} \frac{1}{(x-2)} - \frac{1}{(x+2)} = \frac{x+2 - (x-2)}{x^2 - 4} = \frac{4}{x^2 - 4} \quad \textcircled{D}$$

$$\textcircled{6} \overbrace{2x^2 - 5x + 3}^{m=6, A=-5}$$

$$2x^2 - 2x - 3x + 3$$

$$2x(x-1) - 3(x-1) \quad \textcircled{B}$$

$$\underline{(x-1)(2x-3)}$$

$$\textcircled{7} x^2 - x - 6 = 0$$

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

$$x-3=0 \quad \text{and} \quad x+2=0$$

$$x=3 \quad \quad \quad x=-2$$

$$\quad \quad \quad \textcircled{A}$$

$$\textcircled{8} x^2 + 6x + 7 = 0$$

$$A=1$$

$$B=6$$

$$C=7$$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-6 \pm \sqrt{6^2 - 4(1)(7)}}{2(1)}$$

$$= \frac{-6 \pm \sqrt{36 - 28}}{2}$$

$$= \frac{-6 \pm \sqrt{8}}{2}$$

$$= \frac{-6 \pm 2\sqrt{2}}{2}$$

$$= -3 \pm \sqrt{2} \quad \textcircled{C}$$

$$\textcircled{9} \quad f(x) = 3x^4 - 7x^2 + 2x - 9$$

$$f(-x) = 3(-x)^4 - 7(-x)^2 + 2(-x) - 9$$

$$= 3x^4 - 7x^2 - 2x - 9$$

$\textcircled{B}$

$$\textcircled{10} \quad f(x) = x^2 + 2x + 5$$

$$f(x+h) = (x+h)^2 + 2(x+h) + 5$$

$$= x^2 + 2xh + h^2 + 2x + 2h + 5$$

$$= x^2 + 2x + 2xh + 2h + h^2 + 5$$

$\textcircled{D}$

$$\textcircled{11} \quad (x-1) < 0 \quad \text{or} \quad (x+2) < 0$$

$$x < 1 \quad \quad \quad x < -2$$

$$-2 < x < 1$$

$\textcircled{E}$

$$\textcircled{12} \quad |x-3| \leq 5$$

$$x-3 \leq 5$$

$$x \leq 8$$

$$x-3 \geq -5$$

$$x \geq -2$$

$$-2 \leq x \leq 8$$

$\textcircled{C}$

$$\textcircled{13} \quad 8^{-1/3} \times 3^0$$

$$\left(\frac{1}{8}\right)^{1/3} \times 1$$

$$\frac{1}{2} \times 1 = \frac{1}{2}$$

$\textcircled{C}$

$$\textcircled{14} \quad 2^{-3} + 2^3$$

$$\frac{1}{8} + 8$$

$$\frac{1}{8} + \frac{64}{8} = \frac{65}{8}$$

$\textcircled{D}$

$$\textcircled{15} \quad (16+9)^{-1/2}$$

$$= 25^{-1/2}$$

$$= \frac{1}{25}^{1/2}$$

$$= \frac{1}{5}$$

$\textcircled{C}$

$$\textcircled{16} \quad \frac{1}{(8x^3)^{1/3}} \cdot (4x^2)^{1/2}$$

$$= \frac{1}{2x} \cdot 2x$$

$$= 1$$

$\textcircled{C}$

$$\textcircled{17} \quad 2^x = 20$$

$$\log_2 20 = x \quad \textcircled{E}$$

$$\textcircled{18} \quad \log_{10} 4 + \log_{10} 5 = \log_{10} 20 \quad \textcircled{B}$$

$$\textcircled{19} \quad \log_3 81 = 4$$

$$3^4 = 81 \quad \textcircled{A}$$

$$\textcircled{20} \quad d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(6 - 3)^2 + (9 - 7)^2}$$

$$d = \sqrt{3^2 + 2^2} \quad \textcircled{B}$$

$$d = \sqrt{13}$$

$$\textcircled{21} \quad m = \frac{6 - 2}{3 - 2} = \frac{4}{1} \Rightarrow y - 2 = 4(x - 2)$$

$$y - 2 = 4x - 8$$

$$-4x + y + 6 = 0 \quad \textcircled{B}$$

$$4x - y - 6 = 0$$

$$\textcircled{22} \quad y = 2x - 3$$

$$m = 2 \Rightarrow m = -\frac{1}{2} \quad \textcircled{C}$$

$$\textcircled{23} \quad x - y = 3$$

$$x + y = 1$$

$$2x = 4$$

$$x = 2$$

$$2 + y = 1$$

$$y = -1$$

$$(2, -1)$$

$\textcircled{C}$

24 (B)

25  $y = mx + b$

$m = \frac{1}{2}$      $y = \frac{1}{2}x + 1$  (B)

$b = 1$

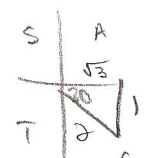
26 (C)

27  $\frac{12}{13}$  (C)

28 (D)

29  $\cos(30) = \frac{\sqrt{3}}{2}$  (C)

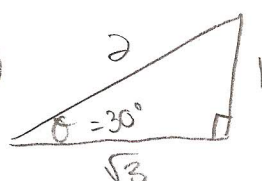
30  $\tan(30) = \frac{1}{\sqrt{3}}$   $\Rightarrow$  (C)



31  $\sec \theta = \frac{r}{x} \Rightarrow$  (B)



32  $30^\circ = \frac{\pi}{180} = \frac{30\pi}{180} = \frac{\pi}{6}$  (A)



33 (D)

$$(34) \quad y + 11 = -2(x^2 - 6x + 9)$$

$$y + 11 - 18 = -2(x - 3)^2$$

$$y - 7 = -2(x - 3)^2$$

$$y = -2(x - 3)^2 + 7$$

$$\text{vertex} = (3, 7)$$

(E)

$$(35) \quad \cos 10 \Rightarrow (A)$$

$$(36) \quad \tan(-30) \Rightarrow (B)$$

$$(37) \quad \sin \theta = \frac{-1}{\sqrt{10}} \text{ opp/hyp} \quad \cos \theta < 0$$

|     |   |
|-----|---|
| s   | A |
| (-) | c |



$$(-1)^2 + b^2 = (\sqrt{10})^2$$

$$(-1)^2 + (-3)^2 = 10$$

$$\underline{1 + 9 = 10}$$

$$\tan \theta = \frac{1}{3}$$

(E)

$$(38) \quad \sin(30^\circ) + \cos(120^\circ)$$

$$= \frac{1}{2} + \left(-\frac{1}{2}\right)$$

$$= 0 \quad (A)$$

|     |   |
|-----|---|
| s   | A |
| (-) | c |

(40)

$$\frac{\frac{1}{3}}{5 - \frac{1}{3}}$$

$$= \frac{\frac{1}{3}}{\frac{14}{3}}$$

$$= \frac{1}{3} \cdot \frac{3}{14}$$

$$= \frac{1}{14}$$

(A)

$$(39) \quad \sin^2(30) + \cos^2(120)$$

$$= \left(\frac{1}{2}\right)^2 + \left(-\frac{1}{2}\right)^2$$

$$= \frac{1}{4} + \frac{1}{4} \Rightarrow \frac{1}{2} \quad (B)$$