

8 5 40 .

1. $z = 1 + 2i - i^3$ $|z| =$

- A 0 B 1 C $\sqrt{2}$ D 2

2. l $(\sqrt{3}, 2)$ $(0, 1)$ l

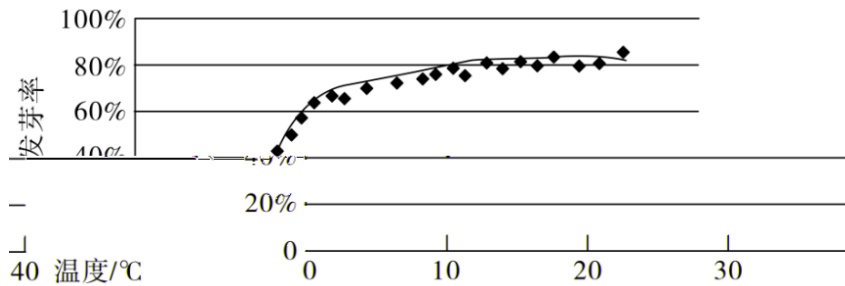
- A 150° B 120° C 60° D 30°

3. $x^2 + y^2 - 2x + y + m = 0$ m

- A $m \leq \frac{5}{4}$ B $m \geq \frac{5}{4}$ C $m \leq \frac{5}{4}$ D $m \geq \frac{5}{4}$

4. $y = f(x)$ $x \in [10, 40]$ $^\circ\text{C}$ 20

$(x_i, y_i) (i = 1, 2, \dots, 20)$



10 $^\circ\text{C}$ 40 $^\circ\text{C}$ y x

- A. $y = a + bx$ B. $y = a + bx^2$ C. $y = a + be^x$ D. $y = a + b \ln x$

5.

- A. B. C. D.

6. $M(1, 1)$

- A. $x + y = 2$ B. $x + y = 1$ C. $x + y = 2$ D. $x + y = 1$

7. $x + y + m = 0$ $y = 2\sqrt{x(x-2)}$ m

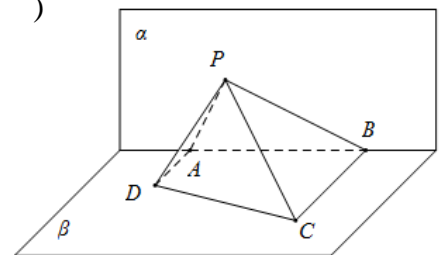
- A. $[1, \sqrt{2}, 2]$ B. $(, 1 + \sqrt{2}) \cup (2,)$
 C. $[1, \sqrt{2}, 1 + \sqrt{2}]$ D. $(, 1 + \sqrt{2}) \cup (1 + \sqrt{2},)$

8. $l \cap l = l$

$DA \perp l$ $CB \perp l$ $AD = 3$ $AB = 6$ $CB = 6$

P $PD \perp PC$

- A. $\frac{\sqrt{3}}{2}$ B. $\frac{\sqrt{5}}{5}$ C. $\frac{1}{2}$ D. 1



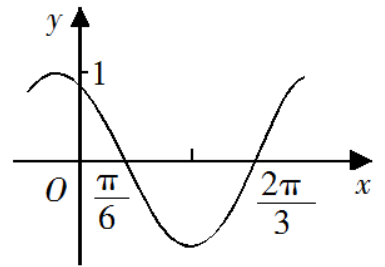
4 5 20 .

5 0 3 .

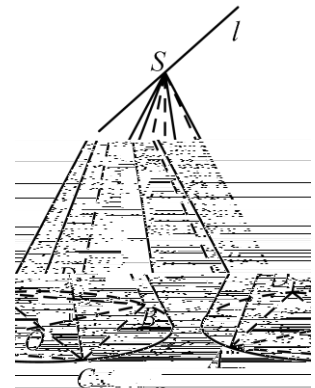
9. A $\frac{y - y_1}{x - x_1} = k$ $M(x_1, y_1)$ k
 B $x - y = \frac{x}{a} - \frac{y}{b} = 1$
 C $y = kx + b$ b
 D .

10. ABC
 A $\sin 2A = \sin 2B$ ABC
 B $A = B$ $\sin A = \sin B$
 C $a = 8$ $c = 10$ $B = 60^\circ$ ABC
 D $\sin^2 A = \sin^2 B = \sin^2 C$ ABC

11. $y = \sin(x - \frac{\pi}{3})$ $\sin(x - \frac{\pi}{3})$
 A. $\sin(x - \frac{\pi}{3})$ B. $\sin(\frac{\pi}{3} - 2x)$
 C. $\cos(2x - \frac{\pi}{6})$ D. $\cos(\frac{5}{6} - 2x)$



12. S O AB CD
 AB CD $SAD \cap SBC = l$
 A $AD \parallel SBC$
 B $l \parallel AD$
 C E $\triangle SAE$ $\triangle SAB$
 D $l \perp SCD$ 45°



4 5 20 2 3 .

13. \vec{a}, \vec{b} $|\vec{a} - \vec{b}| = 1$ \vec{a}, \vec{b} $|\vec{a} - \vec{b}|$.

14. $\frac{1}{2}$ $\frac{1}{3}$

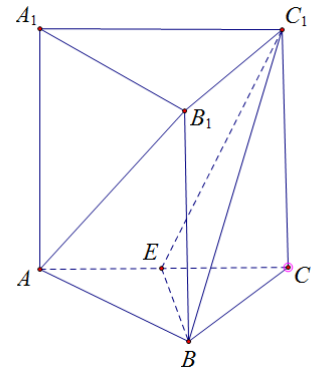
15. $(10, 0)$ $(6, 8)$
 _____ $(4, 2)$ _____

16. $ABCD$ $A_1B_1C_1D_1$ 2 $\angle BAD = 60^\circ$ D_1 $\sqrt{5}$

BCC_1B_1 _____

17.

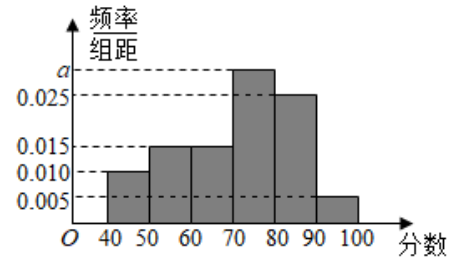
12
 10 $ABC A_1B_1C_1 E AC$
 $AB_1 // BEC_1$
 $BB_1 BA AB_1 EC_1$



18.

12
 $[40, 50), [50, 60), [60, 70), \dots, [90, 100]$
 a

60



[80 100]

[80 90)

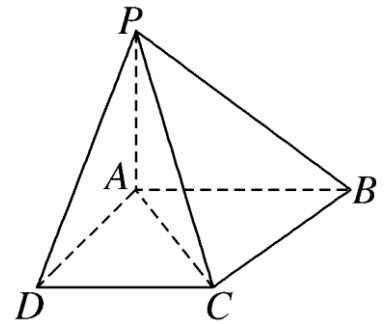
20

19.

12 $\triangle ABC \sin^2 A \sin^2 B \sin^2 C \sin B \sin C .$
 A
 $BC \ 3 \ \triangle ABC .$

20. 12 C $A(5,3)$ $B(4,4)$ x .
 C
 l $(5,2)$ C 6 l .

21. 12 P $ABCD$ PA $ABCD$ $AB // CD$ AD CD 1
 BAD 120° BCA 90° .
 BC PAC
 PCD PAC $\frac{\sqrt{5}}{5}$ A PBC



22. 12 $3(m-1)x + (m-1)y - 6m - 2 = 0$.
 P
 O AOB
 12 AOB 6 .
 $PA = \frac{3}{2}PB$.

8 5 40 .
1-4 CBCD 5-8 BCBA

8. ∴ DA l l AD AD BC

DPA PD CPB PC

DPA CPB DAP CBP 90° ΔDAP ΔCPB $\frac{PA}{PB} = \frac{DA}{BC} = \frac{1}{2}$

AB x AB y
A 30 B 30 P x y y 0
 $2\sqrt{x^2 + y^2} = \sqrt{x^2 + y^2} + x + 5 + y^2 + 16$

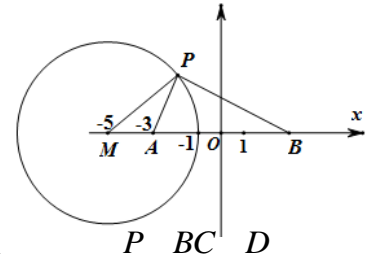
P M 50 4

∴ PBC BC PB BC AB BC PBA

PB PBA cos PBA

4 8 $4\sqrt{3} = \cos PBA \cdot \frac{PB}{MB} = \frac{4\sqrt{3}}{8} = \frac{\sqrt{3}}{2}$

4 5 20 .



5 0 3 .

9. BCD 10. BD 11. BC 12. ABD

12. S O AB CD AB CD
SAD ∩ SBC l ABCD AD // BC BC SBC

AD // SBC A

l AD SAD l BC SBC AD // SBC l // AD B

E ASB 90° SAE SAB

ASB 90 SAE 90

l // AD l SCD AD ADC 45° D .

4 5 20 2 3 .

13. 120° $\sqrt{3}$ 14. $\frac{1}{6}$ $\frac{2}{3}$ 15. $2x + y = 0$ (4, 2) 16. $\frac{\sqrt{2}}{2}$

16. B₁C₁ E BB₁ F CC₁ G

BAD ABCD A₁B₁C₁D₁ 2

D₁B₁C₁ D₁E $\sqrt{3}$ D₁E B₁C₁

ABCD A₁B₁C₁D₁

BB₁ A₁B₁C₁D₁ BB₁ B₁C₁ BB₁ ∩ B₁C₁ B₁

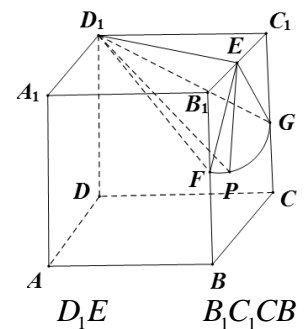
P B₁C₁CB D₁E EP

$\sqrt{5} \cdot D_1E = \sqrt{3} \cdot |EP| = \sqrt{|D_1P|^2 - |D_1E|^2} = \sqrt{5 - 3} = \sqrt{2}$

B₁C₁CB E $\sqrt{2}$

|EF| = |EG| = $\sqrt{2}$ B₁C₁CB EFG FG

B₁EF C₁EG $\frac{1}{4}$ FEG $\frac{1}{2}$ FG $\frac{1}{2} \sqrt{2} = \frac{\sqrt{2}}{2}$.



$$\because A = 0, \quad A = \frac{2}{3} \quad 1 \quad 6$$

$$\frac{BC^2 - AC^2 - AB^2}{2AC} = \cos A \quad \frac{AC^2 - AB^2}{AC} = \frac{AB}{9} \quad 8$$

$$\because AC = AB = \frac{AC + AB}{2} \quad AC = AB$$

$$9 - AC - AB^2 - AC - AB - AC - AB^2 = \frac{AC + AB}{2} = \frac{3}{4} AC - AB^2$$

$$\frac{AC + AB}{2} = 2\sqrt{3} \quad AC = AB \quad 1 \quad 11$$

$$\triangle ABC \quad L \quad AC = AB = BC = 3 \quad 2\sqrt{3} \quad \triangle ABC \quad 3 \cdot 2 \cdot 3 \cdot \quad 12$$

20. $x \quad (x - a)^2 + y^2 = r^2 \quad (r = 0).$ 1

$C \quad A(5,3) \quad B(4,4) \quad (5 - a)^2 + 3^2 = r^2$ 3

$(4 - a)^2 + 4^2 = r^2$ 3

$a = 1 \quad r = 5.$ 5

$C \quad (x - 1)^2 + y^2 = 25.$ 6

$l \quad C \quad 6 \quad C \quad l \quad d = \sqrt{25 - 9} = 4.$ 7

$l \quad l \quad 5, 2$

$l \quad x = 5 \quad C \quad l \quad d = 5 \quad 1 \quad 4$ 8

$l \quad l \quad y = 2 \quad k(x - 5) \quad kx - y - 5k + 2 = 0$ 9

$C \quad l \quad d = \frac{|k \cdot 0 - 5k + 2|}{\sqrt{k^2 + 1}} = 4 \quad k = \frac{3}{4}$ 11

$l \quad 3x - 4y - 23 = 0.$

$l \quad x = 5 \quad 3x - 4y - 23 = 0.$ 12

21. $PA \perp ABCD \quad BC \perp ABCD \quad PA \perp BC$ 1

$\angle BCA = 90^\circ \quad BC \perp CA$ 2

$PA \cap AC = A \quad BC \perp PAC.$ 4

$PA = h \quad CD \perp E \quad AE \perp CD \quad AE \perp AB.$

$PA \perp ABCD \quad A \quad x, y, z$

$A(0,0,0), P(0,0,h), C(\frac{\sqrt{3}}{2}, \frac{1}{2}, 0), D(\frac{\sqrt{3}}{2}, \frac{1}{2}, 0), B(0,2,0)$ 5

$\vec{PC} = (\frac{\sqrt{3}}{2}, \frac{1}{2}, h), \vec{DC} = (0,1,0) \quad PDC \quad \vec{n} = (x_1, y_1, z_1)$

$\vec{n} \cdot \vec{PC} = 0 \quad \frac{\sqrt{3}}{2}x_1 + \frac{1}{2}y_1 + hz_1 = 0$

$\vec{n} \cdot \vec{DC} = 0 \quad y_1 = 0$

PAC

$\vec{BC} = (\frac{\sqrt{3}}{2}, \frac{3}{2}, 0)$

