Test - 27

1) $p(x) = 2x^2 - k\sqrt{2}x + 1$, $\alpha + \beta = \sqrt{2}$,
then $k =$ ——
(a) $\sqrt{2}$ (b) 2 (c) $2\sqrt{2}$ (d) $\frac{1}{2}$

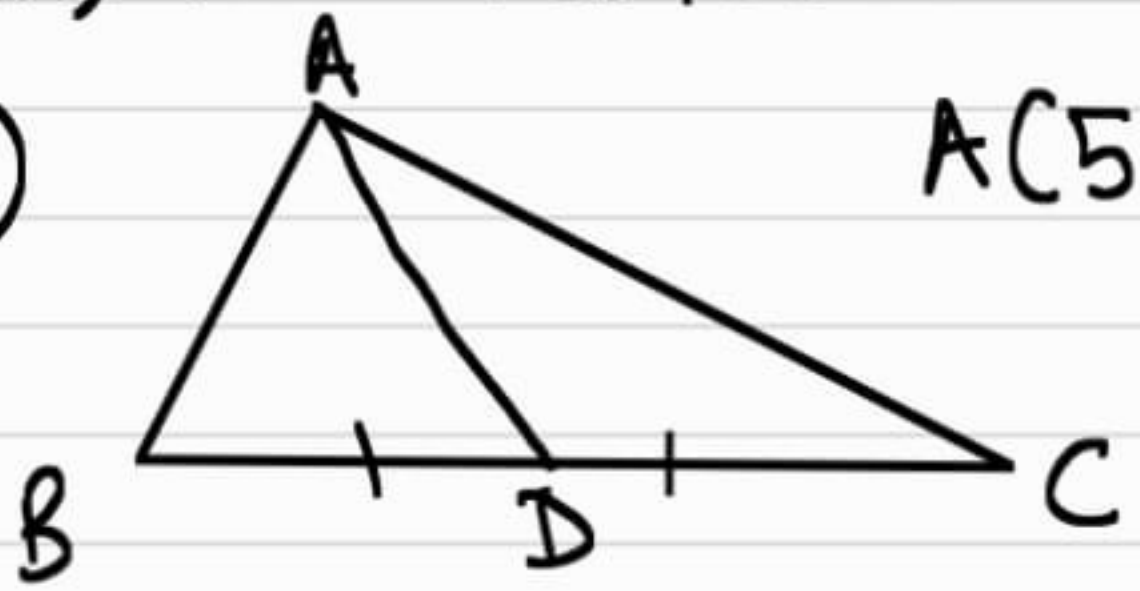
2) P(winning a game) = 0.79
P(losing the game) = ——
(a) 1.79 (b) 0.31 (c) 0.21% (d) 0.21

3) If roots of $ax^2 + bx + c = 0; a \neq 0$ are real and equal, then
(a) $a = b^2/2$ (b) $b^2 = ac$ (c) $ac = b^2/4$ (d) $c = b^2/a$

4) $a = 7$, $a_n = 84$, $S_n = \frac{2093}{2}$, then $n =$ ——
(a) 22 (b) 24 (c) 23 (d) 26

5) $p = 18a^2b^4$; $q = 20a^3b^2$, LCM = ——
(a) $2a^2b^2$ (b) $180a^2b^2$ (c) $12a^2b^2$ (d) $180a^3b^4$

6)



A(5, −6), B(6, 4)
C(0, 0)
AD = ——

(a) $\sqrt{68}$ units (b) $2\sqrt{15}$ units (c) $\sqrt{10}$ units (d) 10 units

7) If $\sec\theta - \tan\theta = m$, $\sec\theta + \tan\theta =$ ___

(a) $1 - \frac{1}{m}$ (b) $m^2 - 1$ (c) $\frac{1}{m}$ (d) $-m$

8) From 1, 4, 7, 9, 16, 21, 25, if all the even numbers are removed, then P(a prime no.) = ___

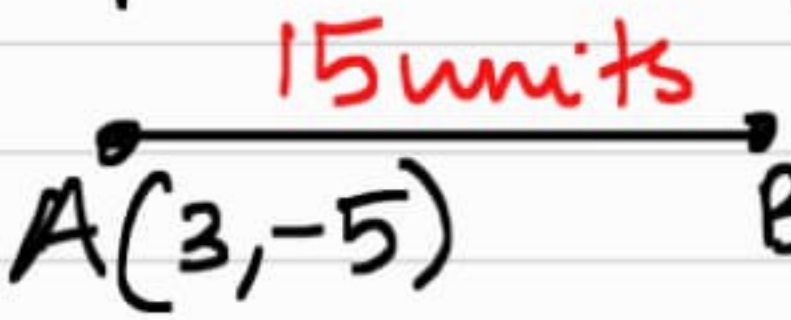
(a) $2/5$ (b) $1/5$ (c) $1/7$ (d) $2/7$

9) $\sum f_i(x_i - \bar{x}) =$ ___

(a) $n\bar{x}$ (b) 1 (c) $\sum f_i$ (d) 0

10) The zeroes of $p(x) = x^2 + px + q$, are twice the zeroes of $f(x) = 4x^2 - 5x - 6$, then $p =$ ___ (a) $-\frac{5}{2}$ (b) $\frac{5}{2}$ (c) -5 (d) 10

11)



, $x =$ ___

(a) 12 or -18 (b) -12 or 18 (c) 18 or 55 (d) -9 or -12

12) $\cos(\alpha + \beta) = 0$, then $\cos\left(\frac{\alpha+\beta}{2}\right) =$ ___

(a) 0 (b) $1/\sqrt{2}$ (c) $1/2$ (d) $\sqrt{2}$

13) A solid sphere is cut into two hemispheres, then the ratio of surface areas of sphere to that of two hemispheres

taken together is —

(a) 1:1 (b) 1:4 (c) 2:3 (d) 3:2

14) The volume of largest cone that can be carved out from a solid cube of edge 2cm is —

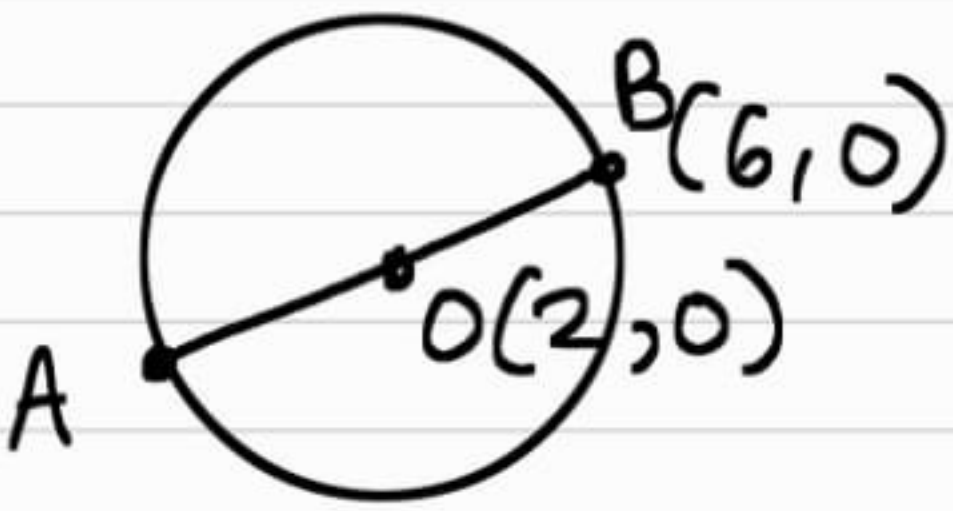
(a) $\frac{4\pi}{3}$ cm^3 (b) $\frac{5\pi}{3}$ cm^3 (c) $\frac{8\pi}{3}$ cm^3 (d) $\frac{2\pi}{3}$ cm^3

15) Two dice are rolled together.

P(sum is 2, 3 or 5) = —

(a) $\frac{1}{36}$ (b) $\frac{11}{36}$ (c) $\frac{5}{36}$ (d) $\frac{4}{9}$

16)



A = —

(a) (0,0) (b) (4,0)

(c) (-2,0) (d) (-6,0)

17) Prove that

(4) $\frac{\tan\theta}{1-\cot\theta} + \frac{\cot\theta}{1-\tan\theta} = 1 + \frac{1}{\sin\theta\cos\theta}$

WHATSAPP TEST — "Pdf" file only

Test-27

1) $k=2$ (b)
2) 0.21 (d)
3) $ac=\frac{b^2}{4}$ (c)
4) $n=23$ (c)
5) $180a^3b^4$ (d)
6) $\sqrt{68}$ units (a)
7) $\frac{1}{m}$ (c)
8) $\frac{1}{5}$ (b)
9) 0 (d)
10) $-\frac{5}{2}$ (a)
11) -12 or 18 (b)
12) $\frac{1}{\sqrt{2}}$ (b)
13) 2:3 (c)
14) $\frac{2\pi}{3}$ cm^3 (d)
15) $\frac{7}{36}$ (a)
16) $(-2,0)$ (c)

17) LHS, $\frac{\tan\theta}{1-\cot\theta}+\frac{\cot\theta}{1-\tan\theta}$

$$=\frac{\sin\theta/\cos\theta}{1-\frac{\cos\theta}{\sin\theta}}+\frac{\frac{\cos\theta}{\sin\theta}}{1-\frac{\sin\theta}{\cos\theta}}$$

$$=\frac{\frac{\sin\theta}{\cos\theta}}{\frac{\sin\theta-\cos\theta}{\sin\theta}}+\frac{\frac{\cos\theta}{\sin\theta}}{\frac{\cos\theta-\sin\theta}{\cos\theta}}$$

$$=\frac{\sin\theta}{\cos\theta}\times\frac{\sin\theta}{\sin\theta-\cos\theta}+\frac{\cos\theta}{\sin\theta}\times\frac{\cos\theta}{\cos\theta-\sin\theta}$$

$$=\frac{\sin^2\theta}{\cos\theta(\sin\theta-\cos\theta)}+\frac{\cos^2\theta}{\sin\theta(\cos\theta-\sin\theta)}$$

$$=\frac{\sin^2\theta}{\cos\theta(\sin\theta-\cos\theta)}-\frac{\cos^2\theta}{\sin\theta(\sin\theta-\cos\theta)}$$

$$=\frac{\sin^3\theta-\cos^3\theta}{\sin\theta\cos\theta(\sin\theta-\cos\theta)}=\frac{(\sin\theta-\cos\theta)(\sin^2\theta+\cos^2\theta+\sin\theta\cos\theta)}{\sin\theta\cos\theta(\sin\theta-\cos\theta)}$$

$$=\frac{1+\sin\theta\cos\theta}{\sin\theta\cos\theta}=\frac{1}{\sin\theta\cos\theta}+1\text{, RHS}$$

$[a^3-b^3=(a-b)(a^2+b^2+ab)]$