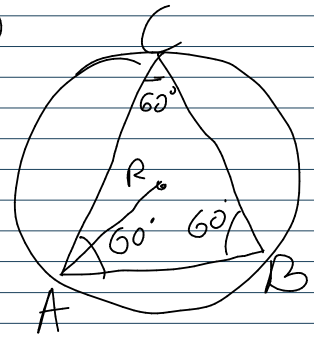
Revision

23 септември 2022 г. 15:15

10/7




$2R = \frac{a}{\sin\alpha}$

$\frac{\sqrt3}{\cancel{2}}\cdot\cancel{2}R = a$

$a = \sqrt3 R$

$R = \frac{a}{\sqrt3}$

$S_\Delta = p.r = \frac{a.b.c}{4R} = \frac{\cancel{a}.b.c}{\frac{4\cancel{a}}{\sqrt3}} = b.c.\frac{\sqrt3}{4} = \frac{\sqrt3.bc}{4} = \frac{\sqrt3.a^2}{4} = \frac{\sqrt3(\sqrt3.R)^2}{4} = \frac{3\sqrt3.R^2}{4}$

$S_o = \pi.R^2$

$P = \frac{S\Delta}{So} = \frac{3\sqrt3.\cancel{R^2}}{4}\cdot\frac{1}{\pi.\cancel{R^2}} = \frac{3\sqrt3}{4.\pi}$

---

(1) $16^{\frac14}.27^{\frac13}.\left(\frac49\right)^{-\frac12}.\left(\frac{8}{27}\right)^{\frac13} = \sqrt[4]{16}.\sqrt[3]{27}.\sqrt{\frac94}.\sqrt[3]{\frac{8}{27}} = 2.3.\frac{\cancel{3}}{\cancel{2}}.\frac{\cancel{2}}{\cancel{3}} = 6$

$(-2\sqrt2)^{\frac23}.27^{-\frac13}.(6\sqrt[3]{6})^{\frac34} = \sqrt[3]{2^2\sqrt{2^2}}.\sqrt[3]{\frac{1}{27}}.\sqrt[4]{6^3\sqrt[3]{6^3}} = 2.\frac{1}{\cancel{3}}.\cancel{6}^2 = 4$

$\frac{10\sqrt[3]{\frac32}.\sqrt3}{\sqrt[6]{27}.\sqrt[3]{-6}.\sqrt[3]{2}} = \frac{10.\frac{\sqrt[3]{3}}{\sqrt[3]{2}}.\sqrt3}{\sqrt3.(-1)\sqrt[3]{3}.\sqrt[3]{2}.\sqrt[3]{2}} = 10.\frac{1}{\sqrt[3]{2}}.\frac{1}{(-1)\sqrt[3]{2}.\sqrt[3]{2}} = \frac{\cancel{10}}{-\cancel{2}} = -5$

(2) $\log_4 5,2$ и $0$ $\quad 0 = \log_4 1$

$\log_4 5,2$ и $\log_4 1$

осн $4>1 \Rightarrow 5,2>1$

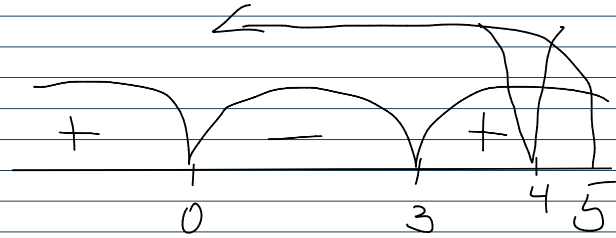
$\log_{0,2} 3$ и $1$ $\quad 1 = \log_{0,2} 0,2$

$\log_{0,2} 3$ и $\log_{0,2} 0,2$

осн $0,2<0 \Rightarrow 0,2>3$

(3) $\log_{5-x}(x^2-3x)$

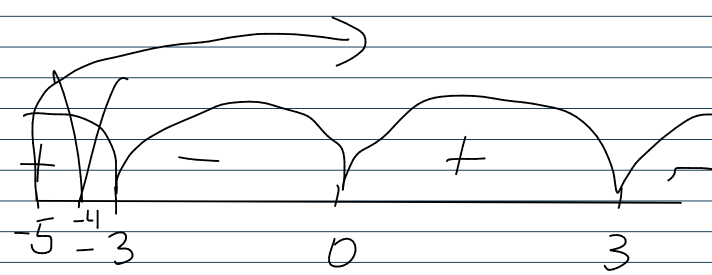
$\begin{cases} x^2-3x>0 \\ 5-x>0 \\ 5-x\neq1 \end{cases} \quad \begin{cases} x(x-3)>0 \\ x<5 \\ x\neq4 \end{cases}$




$x \in (-\infty;0)(3;4)(4;5)$

$\log_{5+x}\left(\frac{9-x^2}{x}\right)$

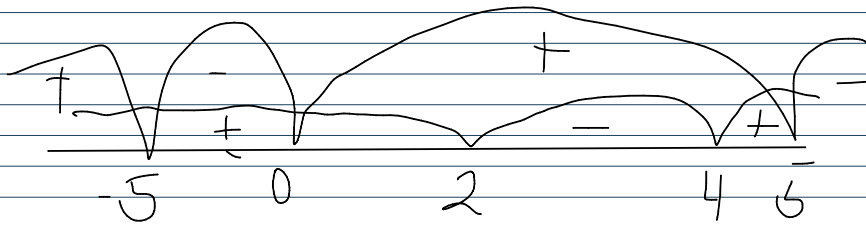
$\begin{cases} \frac{9-x^2}{x}>0 \\ 5+x>0 \\ 5+x\neq1 \end{cases} \quad \begin{cases} \frac{(3-x)(3+x)}{x}>0 \\ x>-5 \\ x\neq-4 \end{cases}$



$x \in (-5;-4)(-4;-3)(0;3)$

$\log_3(x^2-6x+8)+\log_3(25x-x^3)$

$\begin{cases} x^2-6x+8>0 \\ 25x-x^3>0 \end{cases}$ $\quad x_1=4 \quad x_2=2 \quad$ $\begin{cases} (x-4)(x-2)>0 \\ x(5-x)(5+x)>0 \end{cases}$




$x \in (-\infty;-5)(0;2)(4;5)$

(4) $\log_6 x = 3\log_6 2 + 0{,}5\log_6 25 - \log_6 9$

$\log_6 x = \log_6 8 + \log_6 \sqrt{25} - \log 9$

$\log_6 x = \log\left(\frac{8\cdot 5}{9}\right) \Rightarrow x\ \frac{40}{9}$

(5) $tg\alpha = -\frac{\sqrt{11}}{5}$ $\qquad \frac{3\pi}{2} < \alpha < 2\pi$ $\qquad \cos > 0 \quad \sin < 0$

$tg\alpha = \frac{\sin\alpha}{\cos\alpha} = -\frac{\sqrt{11}}{5}$ $\qquad \sin\alpha = -\frac{\sqrt{11}}{5}\cdot\cos\alpha$

$\sin^2\alpha + \cos^2\alpha = 1$ $\qquad \sin\alpha = -\frac{\sqrt{11}}{\cancel{5}}\cdot\frac{\cancel{5}}{6}$

$\left(-\frac{\sqrt{11}}{5}\cdot\cos\alpha\right)^2 + \cos^2\alpha = 1$ $\qquad \sin\alpha = -\frac{\sqrt{11}}{6}$

$\frac{11}{25}\cdot\cos^2\alpha + \cos^2\alpha = 1$

$\frac{36}{25}\cdot\cos^2\alpha = 1$

$\cos\alpha = \pm\frac{5}{6} = \frac{5}{6}$

$\sin 2\alpha = 2\cdot\sin\alpha\cdot\cos\alpha =$

$= \cancel{2}\cdot -\frac{\sqrt{11}}{6}\cdot\frac{5}{6} = \frac{-5\sqrt{11}}{18}$

$\cos 2\alpha = \sin^2\alpha - \cos^2\alpha =$

$= \frac{11}{36} - \frac{25}{36} = \frac{14}{36} = \frac{7}{18}$

$3\pi < \alpha < 2\pi \,/ : 2$ $\qquad 135 < \frac{\alpha}{2} < 180 \Rightarrow \sin +,\ \cos +$

$\sin\frac{\alpha}{2} = \sqrt{\frac{1-\cos\alpha}{2}} = \sqrt{\frac{\frac{6}{6}-\frac{5}{6}}{2}} = \sqrt{\frac{1}{6}\cdot\frac{1}{2}} = \frac{1}{\sqrt{12}}\cdot\frac{\sqrt{12}}{\sqrt{12}} = \frac{\sqrt{12}}{12}$

$\cos\frac{\alpha}{2} = -\sqrt{\frac{1+\cos\alpha}{2}} = \sqrt{\frac{\frac{11}{6}}{2}} = \sqrt{\frac{11}{12}}\cdot\frac{\sqrt{12}}{\sqrt{12}} = \frac{\sqrt{11}\cdot\sqrt{12}}{12}$

(6) $\sin 10\alpha + \sin 2\alpha + \sin 8\alpha + \sin 4\alpha =$

$2\sin\cancel{12\alpha}\cos\cancel{8\alpha} + 2\sin 12\alpha\cdot\cos\cancel{4\alpha} =$

$$2\sin\frac{12\alpha}{2}\cdot\cos\frac{8\alpha}{2}+2\sin\frac{12\alpha}{2}\cdot\cos\frac{4\alpha}{2}=$$

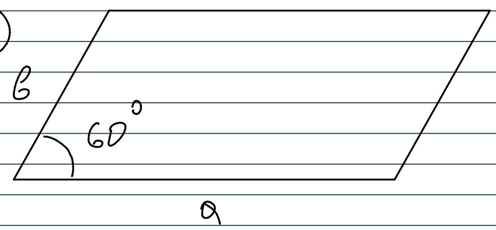
$$=2\sin 6\alpha\cdot\cos 4\alpha+2\sin 6\alpha\cdot\cos 2\alpha=$$

$$=2\sin 6\alpha(\cos 4\alpha+\cos 2\alpha)=$$

$$=2\sin 6\alpha\cdot 2\cos\frac{6\alpha}{2}\cdot\cos\frac{2\alpha}{2}=$$

$$=4\sin 6\alpha\cdot\cos 3\alpha\cdot\cos\alpha$$

(7)




$\measuredangle BAD=60^\circ$, $4a=7б$, $P=44$, $S=?$

$\frac{a}{б}=\frac{7}{4}\Rightarrow a=7x,\ б=4x$

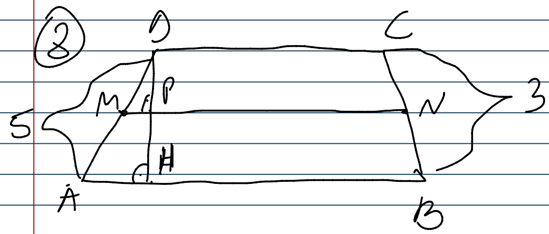
$P=2a+2б$

$44=14x+8x$

$x=2$

$S=a\cdot б\cdot\sin\varphi$ $\quad S=7\cdot 2\cdot 4\cdot\cancel{2}\cdot\frac{\sqrt{3}}{\cancel{2}}$ $\quad S=56\sqrt{3}$

(8)




$S_{MNCD}:S_{ABCD}=5:11$ $\quad ABCD$ вписан

$AD+CB=DC+AB$

$5+3=AB+CD$

$AB+CD=8$

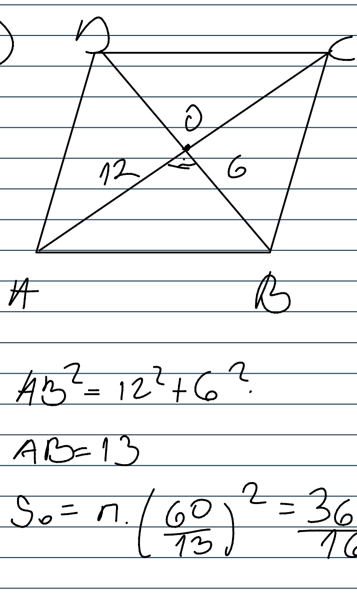
$AB=x,\ CD=8-x$

$MN=\frac{AB+CD}{2}=\frac{8}{2}=4$

$DP=PH=\frac{h_{ABCD}}{2}$

$$\frac{\frac{MN+CD}{\cancel{2}}\cdot\cancel{h}}{\frac{AB+MN}{\cancel{2}}\cdot\cancel{h}}=\frac{5}{11}\qquad\frac{MN+CD}{AB+MN}=\frac{5}{11}\qquad\frac{4+8-x}{x+4}=\frac{5}{11}\qquad x=7$$

(9)




$AC=12,\ BD=10$

$ABCD$ е вписан

$P=\frac{S_{кръг}}{S_{ромб}}$

$S_{ромб}=\frac{1}{2}\cdot AC\cdot BD\cdot\sin\varphi$

$S=\frac{1}{\cancel{2}}\cdot 24\cdot\cancel{12}^{6}=120$

$AB^2=12^2+6^2$

$AB=13$

$S=p\cdot r$

$120=23\cdot r$

$r=\frac{60}{13}$

$p=\frac{4\cdot 13}{2}=26$

$S_0=\pi\cdot\left(\frac{60}{13}\right)^2=\frac{3600\pi}{169}$

$$P=\frac{\frac{3600\pi}{169}}{120}=\frac{30\pi}{169}$$