$\cancel{18t^2+2t-3=0}$

$\cancel{D=4+}$

$6t^2+2t-1=0$

$D=4+$

$10-18\cos x=36\cos^2x+24\cos x+4$

$36\cos^2x+24\cos x+4-10+18\cos x=0$

$36\cos^2x+6\cos x-6=0$

Пусть $\cos x=t$:

$36t^2-6t-6=0 \mid :6$

$6t^2-t-1=0$

$D=1+24=5^2$

$t_1=0{,}5$

$t_2=-\frac{1}{3}$

Обр. замена

$\cos x=0{,}5$

$x=\frac{\pi}{3}+2\pi R$,

$x=\frac{5\pi}{3}+2\pi R$, где $R\in Z$

$\cos x=-\frac{1}{3}$

$x=\pi-\arccos\frac{1}{3}+2\pi R$,

$x=\pi+\arccos\frac{1}{3}+2\pi R$, где $R\in Z$

Ответ: $\frac{\pi}{3}+2\pi R$,

$\frac{5\pi}{3}+2\pi R$,

$\pi-\arccos\frac{1}{3}+2\pi R$,

$\pi+\arccos\frac{1}{3}+2\pi R$,

где $R\in Z$

Итоговая контрольная работа

A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	B1	B2
1	1	4	2	4	3	2	2	2	3	2	3	7	25

B3	B4	B5	C1
5		1	$\frac{1}{3}$

A5)

$\frac{1}{\cos^2x}+\cos x=tg^2x$

$\frac{1}{\cos^2x}+\cos x=\frac{\sin^2x}{\cos^2x}$

$\frac{1-\sin^2x}{\cos^2x}+\cos x=0$

$\frac{\cos^2 x}{\cos^2 x} + \cos x = 0$

$1 + \cos x = 0$

$\cos x = -1$

$x = \pi + 2\pi k$, где $k \in Z$

A6)

$\log_5(x-1) - \log_5(x-3) = 1$ | ОДЗ $x \geq 1$, $x \geq 3$ $\Rightarrow x > 3$

~~$\log_5(x-1) - \log_5(x-3) = \log_5 5$~~

~~$x-1 = x+3=$~~

$\log_5\left(\frac{x-1}{x-3}\right) = \log_5 5$

$\frac{x-1}{x-3} = 5 \quad | \cdot (x-3)$

$x-1 = 5x-15$

$4x = 14$

$x = \frac{14}{4} = \frac{7}{2}$

A7)

$4 \geq 16^{x+1}$

$4 \geq 4^{2x+2}$

$2x+2 \leq 1$

$2x \leq -1$

$x \leq -\frac{1}{2}$

A8)

$\frac{1}{x+3} - 1 > 0$

$\frac{1}{x+3} > 1 \quad | \cdot (x+3)$

$1 > x+3$

$x < -2$

A9)

$\sqrt{3-2x} = -x \quad | \uparrow^2$ | ОДЗ $3-2x \geq 0$, $2x \leq 3$, $x \leq \frac{2}{3}$; $-x \geq 0$, $x \leq 0$

$3-2x = x^2$

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

$D = 4+12 = 4^2$

$x_1 = -1$

$x_2 = 3$ – п.к.

A10)

B1) $\begin{cases} y+5=\sqrt{36+x^2-12x} \\ 2x-y=11 \end{cases}$

ОДЗ
$36+x^2-12x \geq 0$
$D=144-144=0$
$x \in R$

$\begin{cases} 2x-11+5=\sqrt{36+x^2-12x} \\ y=2x-11 \end{cases}$

$2x-6=\sqrt{36+x^2-12x} \quad \uparrow^2$

$4x^2-24x+\cancel{36}=\cancel{36}+x^2-12x$

$4x^2-24x=x^2-12x$

$3x^2=12x$

$x^2=4x \quad |:x$

$x_1=4$

$\begin{cases} x=4 \\ y=2\cdot 4-11=-3 \end{cases}$

$4+3=7$

Ответ: 7

B2)

$6\log_2 125\cdot\log_5 2+2^{\lg 7}\cdot 5^{\lg 7}=$

$=6\log_2 125\cdot\log_5 2+(5\cdot 2)^{\lg 7}=$

$=6\log_2 5^3\cdot\log_5 2+10^{\lg 7}=6\cdot 3\log_2 5\cdot$

$\cdot\log_5 2+10^{\lg 7}=6\cdot 3\cdot 1+10^{\lg 7}=$

$=6\cdot 3\cdot 1+7=18+7=25$

B3)

$\operatorname{ctg} 3x\cdot\sin 6x-\cos 6x-\cos 12x=0$

$\frac{\cos 3x}{\sin 3x}\cdot\sin 6x-\cos 6x-\cos 12x=0$

$\Leftrightarrow \frac{\cos 3x}{\sin 3x}\cdot 2\sin 3x\cos 3x-\cos 6x-\cos 12x=0$

$\frac{\cos 3x\cdot 2\cancel{\sin 3x}\cos 3x}{\cancel{\sin 3x}}-\cos 6x-\cos 12x=0$

$2\cos^2 3x-\cos 6x-\cos 12x=0$

$2\cos^2 3x-(\cos^2 3x-\sin^2 3x)-\cos 12x=0$

$\cos^2 3x-\sin^2 3x-\cos 12x=0$

$\cos 6x-\cos 12x=0$

$\cos 6x-\cos^2 6x+\sin^2 6x=0$

$\cos 6x-\cos^2 6x+(1-\cos^2 6x)=0$

$\cos 6x-\cancel{\cos^2 6x}+1-\cancel{\cos^2 6x}=0$

$\cos 6x+1=0$

$\cos 6x = -1$

$6x = \pi + 2\pi k$, где $k \in Z$

$x = \frac{\pi}{6} + \frac{\pi k}{3}$, где $k \in Z$

$k = 1$

$\frac{\pi}{6} + \frac{\pi}{3} = \frac{3\pi}{6} = \frac{\pi}{2} < 2\pi$

$k = 2$

$\frac{\pi}{6} + \frac{2\pi}{3} = \frac{5\pi}{6} < 2\pi$

$k = 3$

$\frac{\pi}{6} + \frac{3\pi}{3} = \frac{7\pi}{6} < 2\pi$

$k = 4$

$\frac{\pi}{6} + \frac{4\pi}{3} = \frac{9\pi}{6} = \frac{3\pi}{2} < 2\pi$

$k = 5$

$\frac{\pi}{6} + \frac{5\pi}{3} = \frac{11\pi}{6} < 2\pi$

$k = 6$

$\frac{\pi}{6} + \frac{6\pi}{3} = \frac{\pi}{6} + 2\pi$ – не подходит

B4)

$$\frac{\sin\frac{\pi}{4}}{1+tg^2\frac{\pi}{8}} - \frac{\cos\frac{\pi}{4}}{1+ctg^2\frac{\pi}{8}} = \cancel{\frac{\sin\frac{\pi}{4}}{1+\frac{\sin\frac{\pi}{8}}{\cos\frac{\pi}{8}}} - \frac{\cos\frac{\pi}{4}}{1+\frac{\cos\frac{\pi}{8}}{\sin\frac{\pi}{8}}}} =$$

$$= \frac{\sin\frac{\pi}{4}}{1+\frac{1-\cos\frac{\pi}{4}}{1+\cos\frac{\pi}{4}}} - \frac{\cos\frac{\pi}{4}}{1+\frac{1+\cos\frac{\pi}{4}}{1-\cos\frac{\pi}{4}}} =$$

B5)

$6^{\sqrt{x-2}} - 2 < 24 \cdot \left(\frac{1}{6}\right)^{\sqrt{x-2}}$ | ОДЗ $x-2 \geq 0$, $x \geq 2$

$6^{\sqrt{x-2}} - 2 < 24 \cdot 6^{-\sqrt{x-2}}$

Пусть $6^{\sqrt{x-2}} = t$:

$t - 2 < 24 \cdot \frac{1}{t}$

$t - 2 < \frac{24}{t} \quad | \cdot t$

$t^2 - 2t - 24 < 0$

$D = 4 + 96 = 10^2$

$t_1=6$

$t_2=-4$

$-4<t<6$

Обр. замена

$6^{\sqrt{x-2}}>-4$

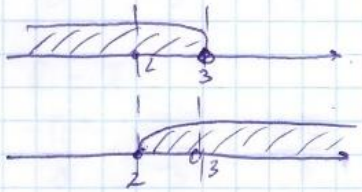
$x\in R$

$6^{\sqrt{x+2}}<6$

$\sqrt{x-2}<1\ |^2$

$x-2<1$

$x<3$



$x\in[2;3)$

1 целое решение (2)

C1)

$2^{6x+2}\cdot3^{5x+1}\cdot5^{4x}=360^{x+1}$

$2^{6x}\cdot4\cdot3^{5x}\cdot3\cdot5^{4x}=360^x\cdot360$

$64^x\cdot4\cdot243^x\cdot625^x=360^x\cdot360$

$64^x\cdot243^x\cdot625^x\cdot\cancel{12}=360^x\cdot\cancel{360}30\ |:12$

$15552^x\cdot625^x=360^x\cdot30$

$9720000^x=360^x\cdot30\ |:360^x$

$27000^x=30$

$30^{3x}=30$

$3x=1$

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