$$\cos\left(\frac{\pi(4x-3)}{3}\right)=\frac{1}{2}$$

$$\frac{\pi(4x-3)}{3}=\frac{\pi}{3}+2\pi n \mid \cdot\frac{3}{\pi}$$

$$4x-3=1+6n$$

$$4x=4+6n \mid :4$$

$$x=1+\frac{3}{2}n$$

при $n=0$

$x=1$

$$\frac{\pi(4x-3)}{3}=-\frac{\pi}{3}+2\pi n \mid \cdot\frac{3}{\pi}$$

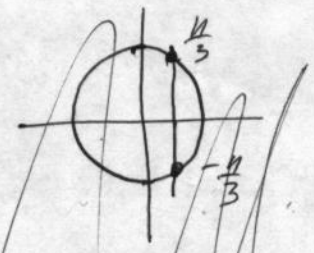
$$4x-3=-1+6n$$

$$4x=2+6n \mid :4$$

$$x=0{,}5+\frac{3}{2}n$$

при $n=0 \Rightarrow$

$x=0{,}5$ — наше полюсное число



Раскроем скобки.

$$\begin{cases} 6x+4y+9=4x+2y \\ 2x+10=3-6x-5y \end{cases} \Leftrightarrow \begin{cases} 2x+4y=12 \mid \cdot 4 \\ 8x+5y=-7 \end{cases} \Leftrightarrow \begin{cases} 8x+16y=48 \\ 8x+5y=-7 \end{cases}$$

$$11y=55$$

$$y=5$$

$$2x+20=12$$

$$2x=-8$$

$$x=-4$$

Ответ: $(-4;5)$

$$\cos\left(\frac{\pi(8x+10)}{4}\right)=\frac{\sqrt{2}}{2}$$

$$\frac{\pi(8x+10)}{4}=\frac{\pi}{4}+2\pi n \mid \cdot\frac{4}{\pi}$$

$$8x+10=1+8n$$

$$8x=-9+8n \mid :8$$

$$x=-\frac{9}{8}+n$$

$n=2$

$$x=-\frac{9}{8}+\frac{16}{8}=\frac{7}{8}$$

$$\frac{\pi(8x+10)}{4}=-\frac{\pi}{4}+2\pi n \mid \cdot\frac{4}{\pi}$$

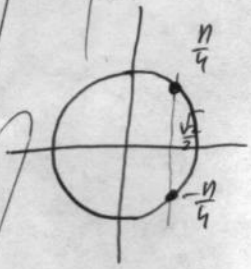
$$8x+10=-1+8n$$

$$8x=-11+8n \mid :8$$

$$x=-\frac{11}{8}+n$$

$n=2$

$$x=-\frac{11}{8}+\frac{16}{8}=\frac{5}{8}$$ — наименьший



$$S=\int_a^b (f_2(x)-f_1(x))\,dx$$

$F_2(x)$ — найдем пределы a и b: $x^2-3=x+3$

$x^2-x-6=0$

$x_1=3 \quad x=-2.$

$$F_2(x)=\frac{x^2}{2}+3x+C$$

$$F_1(x)=\frac{x^3}{3}-3x+C$$

$$S=F_2(x)-F_1(x)\Big|_{-2}^{3}=\frac{x^2}{2}+3x-\frac{x^3}{3}+3x\Big|_{-2}^{3}=\frac{x^2}{2}+\frac{x^3}{3}+6x\Big|_{-2}^{3}=$$

$$=\frac{9}{2}+\frac{27}{3}+18-\frac{4}{2}+\frac{8}{3}+12=\frac{5}{2}+\frac{35}{3}+30=\frac{15+70+180}{6}=\frac{265}{6}=44\frac{1}{6}\ \text{кв. ед.}$$