

$$\cos^4 x + \cos^4 x = 1 + \cos 2x - 2\sin^2 2x$$

$$\cos^4 x + \cos^4 x \geq 2$$

$$f(x) = 1 + \cos 2x - 2\sin^2 x$$

$$f(x) = \cos 2x + \cos 4x = 2\cos^2 2x + \cos 2x - 1$$

$$\cos 2x = t \quad t \text{ принадлежит } [-1; 1]$$

$$f(t) = 2t^2 + t - 1$$

$$t_0 = -b/2a$$

$$t_0 = -1/4$$

$$f(-1/4) = 1/8 - 1/4 - 1 = -9/8$$

$$f(1) = 2 + 1 - 1 = 2$$

правая часть уравнения лежит от $[-9/8; 2]$

а левая ≥ 2

значит они равны 2

$$2\cos^2 2x + \cos 2x = 3$$

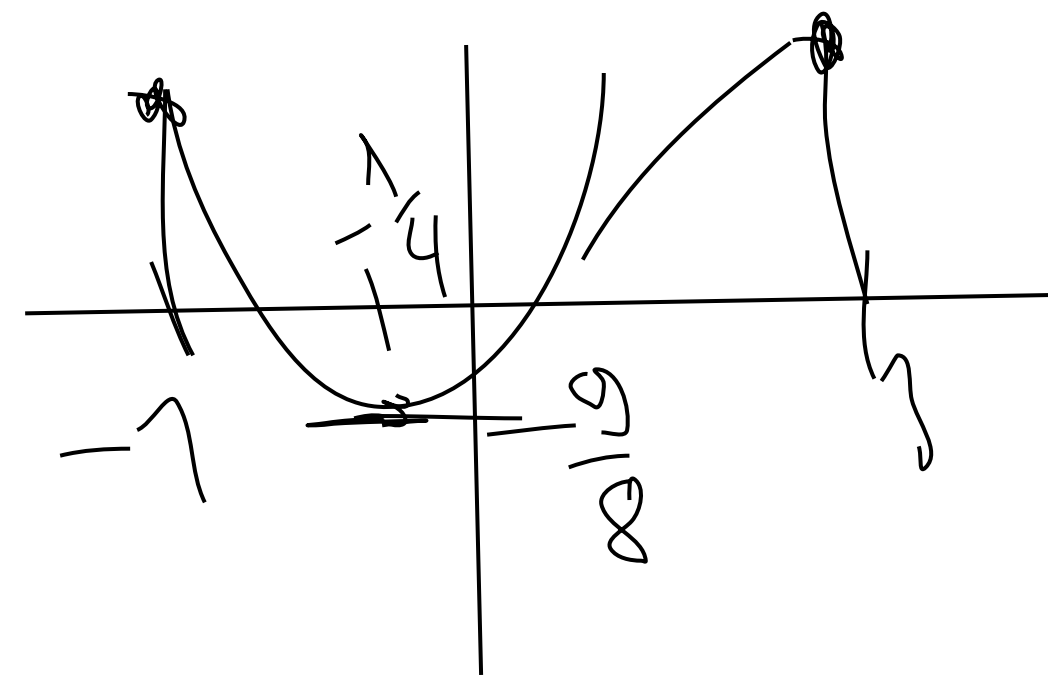
$$a + 1/a \geq 2 \quad a \geq 0$$

$$|a + 1/a| \geq 2 \text{ при всех } a$$

$$-2a + a^2 + 1 \geq 0$$

$$a^2 - 2a + 1 \geq 0$$

$$(a-1)^2 \geq 0$$



$$2\cos^2 2x + \cos 2x = 3$$

$$\cos 2x = a$$

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

$$D = 1 + 24 = 5^2$$

$$a = (-1 + 5)/4 = 1$$

$$a = (-1 - 5)/4 = -3/2 \text{ -- не подходит}$$

$$x = Pk$$

$$1/\cos^4 x + \cos^4 x = 2$$

$$\cos^4 x = t$$

$$1/t + t = 2$$

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

$$t = 1$$

$$\cos x = 1 \Rightarrow 2Pk$$

$$\cos x = -1 \Rightarrow P + 2Pk$$

$$x = Pk$$

Ответ Pk