

1. a, b, c, d $a^2 + b^2 + c^2 = d^2$,
 abc 4. (6)

4 . 1. a, b, c — d^2 , d^2
 3, a, b, c , $a, b,$
 4 2, abc 4. , $a, b,$
 c , $3^2 + 4^2 + 12^2 = 13^2$.

2. , (A B, B , A). (6)

1) . k . (k -
 :
 , (k - 1) . , ,
 , .

3. — $2/7$? (6) ,
 1, : .

$$\frac{2}{7} = \frac{1}{4} + \frac{1}{28}$$

4. , a, b
 $2\sqrt{a} + 3\sqrt[3]{b} \geq 5\sqrt[5]{ab}$. (6)

$$x = b^{1/15}, y = a^{1/10}.$$

$$2y^5 + 3x^5 \geq 5y^2x^3.$$

$$y^5 \quad t = x/y, \quad 3t^5 - 5t^3 + 2 \geq 0.$$

$$f(t) = (3t^5 - 3t^3) - (2t^3 - 2) \geq 0,$$

$$3t^3(t^2 - 1) - 2(t - 1)(t^2 + t + 1) \geq 0,$$

$$(t - 1)(3t^3(t + 1) - 2(t^2 + t + 1)) \geq 0,$$

$$(t - 1)(3t^4 + 3t^3 - 2t^2 - 2t - 2) \geq 0,$$

$$(t - 1)((2t^4 - 2t^2) + (t^4 - t) + (t^3 - t) + (2t^3 - 2)) \geq 0$$

$$(t-1)(2t^2(t^2-1) + t(t^3-1) + t(t^2-1) + 2(t^3-1)) \geq 0,$$

$$(t-1)^2(2t^2(t+1) + t(t^2+t+1) + t(t+1) + 2(t^2+t+1)) \geq 0,$$

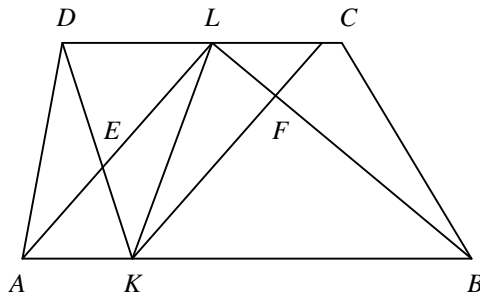
$$(t-1)^2(3t^3 + 6t^2 + 4t + 2) \geq 0.$$

$$t > 0 \quad \geq 0, \quad > 0, \quad , f(t) \geq 0$$

$$t > 0. \quad t = 1, \dots \quad x = y, \dots \quad a^3 = b^2. \quad \square$$

5.

$AB \quad CD \quad ABCD \quad K \quad L \quad E -$
 $AL \quad DK, F - \quad BL \quad CK. \quad ,$
 $\triangle ADE \quad \triangle BCF \quad ,$
 $\quad \quad \quad (6) \quad \quad \quad EKFL. \quad \square$



$$S_{\triangle ADK} = S_{\triangle ALK},$$

$$S_{\triangle AEK} = S_{\triangle ALK} - S_{\triangle ADE} = S_{\triangle KLE}.$$

$$, S_{\triangle BCF} = S_{\triangle KLF}.$$

$$AK \quad DC. \quad S_{\triangle ADE} = S_{\triangle ADK} -$$

$$AB \quad EKFL. \quad \square$$