

9.1 $y = 4ax^2 + 4(a+1)x + a^2 + a + 3 + \frac{1}{a} \quad (a \neq 0)$

?

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$4ax^2 + 4(a+1)x + a^2 + a + 3 + \frac{1}{a}$: D

$$\frac{1}{16}D = (a+1)^2 - a\left(a^2 + a + 3 + \frac{1}{a}\right) = a^2 + 2a + 1 - a^3 - a^2 - 3a - 1 =$$

$$= -a^3 - a = -a(a^2 + 1) > 0.$$

$a^2 + 1 > 0,$ $-a > 0,$ $\dots a < 0.$,

$4a$,

:

9.2 () 1, -

3, - 6.

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,

1,2,3,...,9,10?

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1+3+6=10.

1+2+3+...+9+10=55.

55+10n, n -

10, ... 55+10 = 10 , , , ... 55

10.

:

9.3 $x + y, (x + \sqrt{1+x^2}) \cdot (y + \sqrt{1+y^2}) = 1.$

$\therefore (\sqrt{1+x^2} + x)(\sqrt{1+y^2} + y) = 1$

$, (\sqrt{1+x^2} - x)(\sqrt{1+x^2} + x)(\sqrt{1+y^2} + y) = \sqrt{1+x^2} - x,$

$\dots \sqrt{1+y^2} + y = \sqrt{1+x^2} - x.$

$\sqrt{1+x^2} + x = \sqrt{1+y^2} - y.$

$\sqrt{1+y^2} + y + \sqrt{1+x^2} + x = \sqrt{1+x^2} - x + \sqrt{1+y^2} - y,$

$\dots y + x = -x - y, \dots x + y = 0.$

$\therefore 0.$

9.4 $\frac{DE}{CD} = \frac{DF}{EF},$ $D - DC = BDC.$

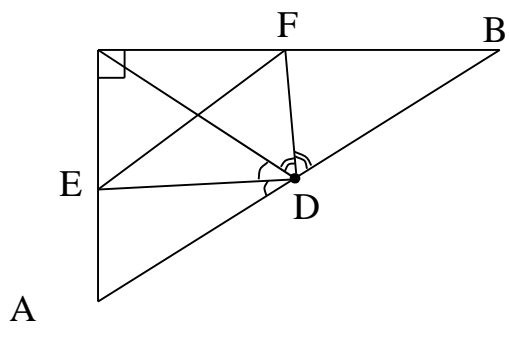
$\therefore \dots$

$EDF - \dots$

$ADB.$

$EF.$ D

($, EF$).



$CD = EF$, $EF -$, $CD -$.
 $\frac{CED}{CDA} = \frac{CFD}{CDA} = \frac{DE}{CDA}$.
 $AD = BD$, $AD = CD$. $BD = CD$.

9.5 m, n , $m -$ $m^2 + \frac{1}{n} = n^2 + \frac{1}{m}$.
 $n = m$, $n -$.

$: m^2 - n^2 = \frac{1}{m} - \frac{1}{n}$, $(m - n)(m + n) = -\frac{(m - n)}{mn}$.
 $m - n = 0$, $n = m$,

$n \neq m$. $m + n = -\frac{1}{mn}$, $mn(m + n) = -1$.

$n = \frac{p}{q}$, $q -$

p, q

$$\frac{mp}{q} \left(m + \frac{p}{q} \right) = -1, \quad mp(mq + p) = -q^2.$$

q , $p = 1$, -1 ($|p| > 1$,
 q^2 , q ,
 q .

$,$

$$\pm m(mq \pm 1) = -q^2.$$

$mq \pm 1$, $mq \pm 1$, q^2 , q^2
 $mq \pm 1 = \pm q^3 \pm 1$, $q \in N$, 1 , -1 . $|m| = q^2$

1 , -1 .

n .