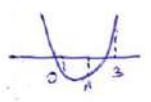


1.60

$$mx^2 - (3m-1)x + 1-m = 0$$

התקיים x^2 של x^2 ויש 2 פתרונות
 $m \neq 0$



$$x^2 - \frac{3m-1}{m}x + \frac{1-m}{m} = 0$$

$f(0) < 0$, $f(1) < 0$, $f(3) > 0$

$0 > \frac{c}{a}$ = יש 2 פתרונות

① $9 - \frac{9m-3}{m} + \frac{1-m}{m} > 0$

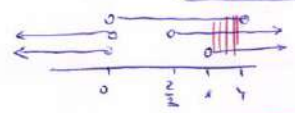
$0 < \frac{9m - 9m + 3 + 1 - m}{m} = \frac{4-m}{m}$ $\frac{+}{-} \frac{+}{-}$ $0 < m < 4$

② $0 > 1 - \frac{3m-1}{m} + \frac{1-m}{m} = \frac{m - 3m + 1 + 1 - m}{m} = \frac{-3m+2}{m}$ $\frac{+}{-} \frac{+}{-}$

$m < 0$ or $m > \frac{2}{3}$

③ $0 > 0 - 0 + \frac{1-m}{m} = \frac{1-m}{m}$ $\frac{-}{-} \frac{+}{-}$ $m < 0$ or $m > 1$

④ $0 > \frac{1-m}{m}$



$1 < m < 4$

1.60

$$\log_x 4 \cdot \log_2 \frac{5-12x}{12x-8} \geq 2$$

$$2 \log_x 2 \cdot \log_2 \frac{5-12x}{12x-8} \geq 2$$

$$\frac{\log_2 2}{\log_x 2} \cdot \frac{\log_2 \frac{5-12x}{12x-8}}{\log_2 2} \geq 1$$

$$\log_x \frac{5-12x}{12x-8} \geq 1$$

$$\frac{5-12x}{12x-8} \geq x$$

$$\frac{5-12x-12x^2+8x}{12x-8} \geq 0$$

$$0 \leq \frac{-12x^2-4x+5}{12x-8} = \frac{(-6x-5)(2x-1)}{12x-8}$$

ϕ $x > 1$ plhnp $x < -\frac{5}{6}$ \vee $\frac{1}{2} < x < \frac{2}{3}$

$$\log_x \frac{5-12x}{12x-8} \geq 1$$

$0 < x < 1$ plhnp

$$x \geq \frac{5-12x}{12x-8} \rightarrow \frac{5-12x-12x^2+8x}{12x-8} \leq 0$$

plhnp $\frac{5}{12} < x < \frac{1}{2}$ \vee $0 < x < \frac{1}{2}$ \vee $-\frac{5}{6} < x < \frac{1}{2}$ \vee $x > \frac{2}{3}$

LOCAL CRUCIAL 6/

plhnp $1 \neq x > 0$
 $x \neq \frac{2}{3}$

$$0 < \frac{5-12x}{12x-8} \rightarrow \frac{5}{12} < x < \frac{2}{3}$$

$x > 1$ plhnp



$$\frac{1.60}{4}$$

$$1, 8, 22, \dots$$

$$* 7, 14, \dots$$

$$a_n = 1 + \frac{n-1}{2} [2 \cdot 7 + 7(n-2)]$$

$$a_n = 1 + \frac{n-1}{2} [7n] = \frac{7n^2 - 7n + 2}{2}$$

$$35351 = \frac{7n^2 - 7n + 2}{2} \quad (1)$$

$$70702 = 7n^2 - 7n + 2$$

$$7n^2 - 7n - 70700 = 0 \quad | :7$$

$$n^2 - n - 10100 = 0$$

$$n = 101, -100$$

1.60
5

$$(1 - \tan x)(1 + \sin 2x) = 1 + \tan x$$

$$\boxed{x \neq \frac{\pi}{2} + \pi k} \quad 1 - \tan x + \sin 2x - \frac{2 \sin x \cos x \cdot \sin x}{\cos x} = 1 + \tan x$$

$$\sin 2x - 2 \tan x - 2 \sin^2 x = 0$$

$$\sin x \left(2 \cos x - \frac{2}{\cos x} - 2 \sin x \right) = 0$$

$$\boxed{x = \pi k}$$

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

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

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

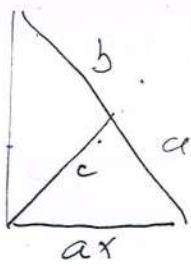
$$-2 \sin x (\sin x + \cos x) = 0$$

$$\boxed{x = \pi k}$$

$$\tan x = -1$$

$$x = -\frac{\pi}{4} + \pi k$$

1.69
6



עם אמצע הנוצה הצלול - הניכס בין הניכס
 שווה ל $\frac{a}{b}$ וכן אצל הניכס ?

bx ! ax

אם נשתמש בפיטגורס

$$b^2 x^2 + a^2 x^2 = (a+b)^2$$

$$x^2 (a^2 + b^2) = (a+b)^2$$

$$x^2 = \frac{(a+b)^2}{a^2 + b^2}$$

אם נשתמש בקוטר האורך הנוצה הצלול

$$c^2 = ax \cdot bx - ab = abx^2 - ab = ab \left[\frac{(a+b)^2}{a^2 + b^2} - 1 \right] =$$

$$= ab \left[\frac{a^2 + 2ab + b^2 - a^2 - b^2}{a^2 + b^2} \right] = \frac{2ab^2}{a^2 + b^2}$$

$$c = \sqrt{\frac{2a^2 b^2}{a^2 + b^2}} = ab \sqrt{\frac{2}{a^2 + b^2}}$$