

10 : 18

$$\log_6 216 = x \quad .3$$

$$216 = 6^x \rightarrow 6^3 = 6^x \rightarrow 3 = x$$

$$\log_{\frac{2}{3}} \frac{32}{243} = x \quad .12$$

$$\frac{32}{243} = \left(\frac{2}{3}\right)^x \rightarrow \frac{2^5}{3^5} = \left(\frac{2}{3}\right)^x \rightarrow \left(\frac{2}{3}\right)^5 = \left(\frac{2}{3}\right)^x$$

$$\rightarrow 5 = x$$

$$\log_9(3x - 6) = 0 \quad .14$$

$$3x - 6 = 9^0 \rightarrow 3x - 6 = 1 \rightarrow 3x = 7$$

$$\rightarrow x = \frac{7}{3}$$

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$$\log_3(x^2 + 2x) = 1 \quad .19$$

$$x^2 + 2x = 3^1 \rightarrow x^2 + 2x - 3 = 0$$

$$x_1 = 1, x_2 = -3$$

$$\log_{2x}(4(x^2) - 3x + 18) = 2 \quad .24$$

$$4x^2 - 3x + 18 = (2x)^2$$

$$\cancel{4x^2} - 3x + 18 = \cancel{4x^2}$$

$$3x = 18$$

$$x = 6$$

12 *nr*

$$\log_5 7 + \log_5 3x = \log_5 21 \quad .4$$

$$\log_5 (7 \cdot 3x) = \log_5 (21)$$

$$21x = 21$$

$$x = 1$$

13 *nr*

$$\log_5 (x - 1) - \log_5 4 = \log_5 7 \quad .15$$

$$\log_5 \left(\frac{x-1}{4} \right) = \log_5 (7)$$

$$\frac{x-1}{4} = 7$$

$$x-1 = 28$$

$$x = 29$$

$$0.5 \log_5 x^2 = \log_5 3 + \log_5 4 \quad .26$$

$$\log_5 (x^2)^{\frac{1}{2}} = \log_5 (3 \cdot 4)$$

$$\sqrt{x^2} = 12$$

$$x^2 = 144$$

$$x = \pm 12$$

14 *nr*

$$\log_3 x + \log_9 x = 3 \quad .33$$

$$\log_3 x + \frac{\log_3 x}{\log_3 9} = 3$$

$$\log_3 x + \frac{\log_3 x}{2} = 3 \quad | \cdot 2$$

$$2 \log_3 x + \log_3 x = 6$$

$$3 \log_3 x = 6 \quad | : 3$$

$$\log_3 x = 2$$

$$x = 3^2$$

$$x = 9$$

$$\log_4 x - \log_{16} x^2 = 0 \quad .35$$

$$\log_4 x = \frac{\log_4 x^2}{\log_4 16}$$

$$\log_4 x = \frac{\log_4 x^2}{2} \quad | \cdot 2$$

$$2 \log_4 x = \log_4 x^2$$

$$\cancel{2} \log_4 x = \cancel{2} \log_4 x$$

$$x = x$$

$$x >$$

65 '18

$$\log_6 x^2 > \log_6(4x + 2) \quad .7$$

$$x \neq 0, \quad x > -\frac{1}{2} \quad \therefore \text{25}$$

$$x \neq 0 \leftarrow x^2 > 0$$

$$4x + 2 > 0$$

$$4x > -2$$

$$x > -\frac{1}{2}$$

$$x^2 > 4x + 2$$

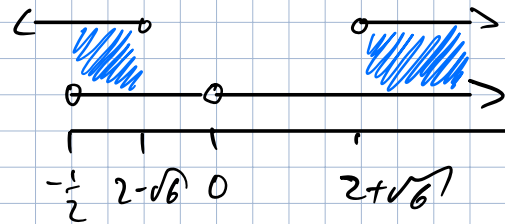
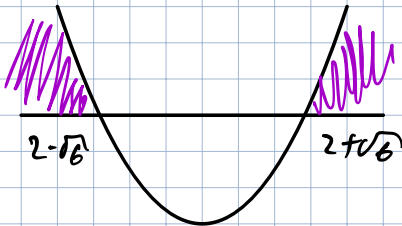
$$x^2 - 4x - 2 > 0$$

$\therefore \text{30.2}$

$$x^2 - 4x - 2 = 0$$

$$x_1 = 2 + \sqrt{6}$$

$$x_2 = 2 - \sqrt{6}$$



$$-\frac{1}{2} < x < 2 + \sqrt{6}$$

14

$$2 + \sqrt{6} < x$$

$$\log_{18} 2x^2 \leq 1 \quad .8$$

$$2x^2 > 0$$

$$x^2 > 0$$

$$x \neq 0$$

ترتيب

$$2x^2 \leq 18 \quad | :2$$

$$x^2 \leq 9$$

$$x^2 - 9 \leq 0$$

$$(x+3)(x-3) \leq 0$$

نقطه صفر

$$(x+3)(x-3) = 0$$

$$\begin{array}{l} \swarrow \quad \searrow \\ x = -3 \quad x = 3 \end{array}$$

$$-3 \leq x < 0$$

یا

$$0 < x \leq 3$$



$$\log_2 \frac{x-5}{2x+3} > 0 \quad .10$$

$$\frac{x-5}{2x+3} > 0$$

$$2x+3 \neq 0 \quad \text{و نه}$$

⇓

$$2x+3 = 0$$

$$2x = -3$$

$$x = -1.5$$

$$x \neq -1.5$$

ترتيب

$$\frac{x-5}{2x+3} > 0 \quad | \cdot (2x+3)^2$$

$$(x-5)(2x+3) > 0$$

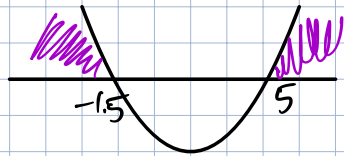
$$(x-5)(2x+3) = 0$$

$$\begin{array}{l} \swarrow \quad \searrow \\ x = 5 \quad x = -1.5 \end{array}$$

$$x < -1.5$$

یا

$$5 < x$$



עכשיו ניבט את האיילוי:

$$\frac{x-5}{2x+3} > 2^0$$

$$\frac{x-5}{2x+3} > 1 \quad | \cdot (2x+3)^2$$

$$(x-5)(2x+3) > (2x+3)^2$$

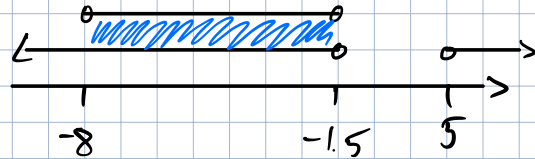
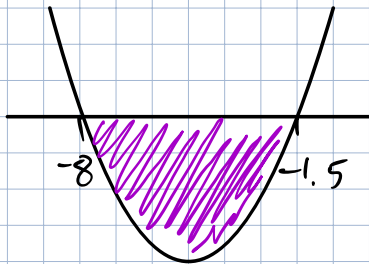
$$2x^2 - 7x - 15 > 4x^2 + 12x + 9$$

$$0 > 2x^2 + 19x + 24$$

פ. 252:

$$0 = 2x^2 + 19x + 24$$

$$x_1 = -1.5 \quad x_2 = -8$$



$$-8 < x < -1.5$$

באיור יטעו חברה האל
 טיפויין לפני האילוי
 הוא תיגדו או טלוי, אדער
 עכשיו שרש' הטיינזון האבנה
 גריבוז ובק ע'ה'גנה אבסו
 ג'וסר טלוי.

$$\log_{0.4} x^2 < \log_{0.4} 25 \quad .12$$

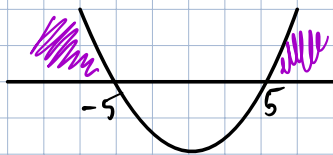
$$x^2 > 25 \quad / \quad \begin{array}{l} \text{הבסיס } 0 < 1 \\ \text{אם } 1 > 0 \end{array}$$

$$x^2 - 25 > 0 \quad \begin{array}{l} \text{סיווג הבסיס } \\ \text{הפוך } > 0 \end{array}$$

$$x^2 - 25 = 0 \quad \text{כאשר}$$

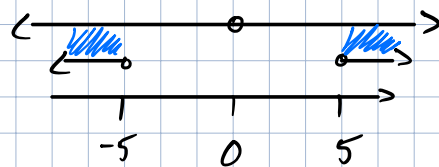
$$(x-5)(x+5) = 0$$

$$\begin{array}{l} \downarrow \\ x=5 \end{array} \quad \begin{array}{l} \downarrow \\ x=-5 \end{array}$$



$$x^2 > 0 \quad \text{לכן}$$

$$x \neq 0$$



$$x < -5$$

או

$$5 < x$$