

$$\boxed{1} (a+b)^r = a^r + r a b + b^r \quad (a, b)$$

$$\boxed{2} (a-b)^r = a^r - r a b + b^r$$

$$\text{Uso } \boxed{1} (x-y)^r = x^r - r(x)(y) + (y)^r \Rightarrow x^r - \varepsilon x + \varepsilon$$

$$\boxed{2} (x-y)^r = x^r - r(x)(y) + (y)^r \Rightarrow x^r - r x y + y^r$$

$$(a^m)^n = a^{mn}$$

$$\boxed{3} (x-y)^r = (x)^r - r(x)(y) + (y)^r \Rightarrow x^r - r x y + y^r$$

$$\boxed{4} (x+y)^r = (x)^r + r(x)(y) + (y)^r \Rightarrow x^r + r x y + y^r$$

$$\boxed{5} (\sqrt{x} - \sqrt{y})^r = (\sqrt{x})^r - r(\sqrt{x})(\sqrt{y}) + (\sqrt{y})^r \Rightarrow x^{r/2} - r \sqrt{x y} + y^{r/2}$$

$$a^m \times a^n = a^{m+n}$$

$$\boxed{1} (a-b)(a+b) = a^2 - b^2$$

$$\text{Uso } \boxed{1} (x-y)(x+y) = x^2 - y^2$$

$$\boxed{2} (x-y)(x+y) = (x)^2 - y^2 \Rightarrow x^2 - y^2$$

$$\boxed{3} (x+y)(x-y) = (x)^2 - (y)^2 \Rightarrow x^2 - y^2$$

$$\boxed{4} (\sqrt{x} - \frac{1}{\sqrt{x}})(\sqrt{x} + \frac{1}{\sqrt{x}}) = (\sqrt{x})^2 - (\frac{1}{\sqrt{x}})^2 \Rightarrow x - \frac{1}{x}$$

$$\boxed{3} \quad (\underline{a} + \underline{b})(\underline{c} + \underline{d}) = \underline{ac} + \underbrace{(\underline{a} + \underline{b})\underline{c}}_{\text{ع2}} + \underbrace{\underline{ad}}_{\text{ع3}}$$

جواب

$$\boxed{1} \quad (\underline{x} + \underline{5})(\underline{x} + \underline{1}) = \underline{x^2} + \underline{9x} + \underline{15}$$

$$\boxed{2} \quad (\underline{x} + \underline{5})(\underline{x} - \underline{1}) = \underline{x^2} - \underline{4x} - \underline{15}$$

$$\boxed{3} \quad (\underline{x} - \underline{5})(\underline{x} - \underline{1}) = \underline{x^2} - \underline{9x} + \underline{15}$$

$$\boxed{4} \quad (\underline{x} - \underline{5})(\underline{x} + \underline{1}) = \underline{x^2} + \underline{4x} - \underline{15}$$

$$\boxed{5} \quad (5x - 2)(5x - 1) = (5x)^2 - 11(5x) + 21$$

$$\Rightarrow 25x^2 - 55x + 21$$

$$\boxed{6} \quad (5x^2 - 2)(5x^2 - 1) = (5x^2)^2 + \overbrace{(-2-1)}^{-3}(5x^2) + (-2)(-1)$$

$$\Rightarrow 25x^4 - 15x^2 + 1$$

$$\boxed{7} \quad (5x^2 - 2)(5x^2 + 1) = (5x^2)^2 + \overbrace{(-2+1)}^{-1}(5x^2) + (-2)(+1)$$

$$\Rightarrow 25x^4 - 5x^2 - 1$$

$$\boxed{8} \quad \frac{5x^2}{x} - \frac{1x}{x} = x(5x - 1)$$

تفصيل
 $\boxed{1}$ فکتوريزي:

$$\boxed{9} \quad \frac{10x^2}{5x^2} - \frac{4x^2}{5x^2} = 5x^2(2x^2 - 1)$$

$$\boxed{10} \quad \frac{5xy}{5xy} - \frac{7xy}{5xy} - \frac{1xy}{5xy} z =$$

$$\boxed{\frac{a^m}{a^n} = a^{m-n} \text{ د راسي}}$$

$$5xy(x^2y - 7xy^2 - 1z)$$

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

۲) تفریق مربعی

$$\boxed{1} \quad x^2 - y^2 = (x - y)(x + y)$$

$$\boxed{2} \quad (x^2 - 4) = (x - 2)(x + 2)$$

$$\boxed{3} \quad (25x^2 - 4y^2) = (5x)^2 - (2y)^2 \Rightarrow (5x - 2y)(5x + 2y)$$

تجزیه

۴) مربع های همبسته

۵) مربع و مربع های تفاضل

۶) مربع مشترک

۱) $x^2 + 8x + 4 = (x + 4)(x + 4)$

علامت عدد در زیر خط

۲) $x^2 + 14x + 10 = (x + 7)(x + 3)$

۳) $(5x^2 + 14x + 15) = (5x + 3)(x + 5)$

۴) $(5x^2 + 14x + 15) = (5x + 3)(x + 5)$

۵) $(5x^2 + 14x + 15) = (5x + 3)(x + 5)$

۶) $(5x^2 + 14x + 15) = (5x + 3)(x + 5)$

$$\boxed{4} \quad (x^2 + 8x + 4) = (x + 4)(x + 4)$$

$$\boxed{5} \quad (5x^2 + 14x + 15) = (5x + 3)(x + 5)$$

$$\boxed{6} \quad (5x^2 + 14x + 15) = (5x + 3)(x + 5)$$

$$(5x + 1)(5x + 10) = 5x^2 + 14(5x) + 10$$

$$\boxed{7} \quad (5x^2 + 14x + 15) = (5x + 3)(x + 5) = (5x + 3)^2$$

$$\boxed{\omega} \quad x^5 - 10x + 5 = (x - \omega)(x - \omega) = (x - \delta)^5$$

$$\boxed{\Pi} \quad \frac{|x|}{x+y} + \frac{r_x}{x+y} = \frac{1+r}{(x+y)} = \frac{r}{x+y}$$

$$\boxed{\gamma} \quad \frac{r}{x-y} + \frac{\omega}{y-x} = \frac{r}{x-y} - \frac{\omega}{x-y} = \frac{r-\omega}{(x-y)} = \frac{-r}{x-y}$$

$$\boxed{\mu} \quad \frac{x^5}{(x-\gamma)(x+\gamma)} + \frac{r_x}{x+\gamma} - \frac{r_x}{x-\gamma} =$$

$$\Rightarrow \frac{x^5 + r_x - r_x - r_x - r_x}{(x-\gamma)(x+\gamma)}$$

$$\Rightarrow \frac{x^5 - 4x}{(x-\gamma)(x+\gamma)} = \frac{x(x-4)}{(x-\gamma)(x+\gamma)}$$

$$\boxed{\varepsilon} \quad \frac{r_x}{x^5+0x+4} + \frac{r_x}{x^5-4} = \frac{r_x - 4 + x^5 + r_x}{(x+\gamma)(x-\gamma)(x-\gamma)}$$

$$\frac{r_x + 4}{(x+\gamma)(x-\gamma)} + \frac{r_x}{x(x-\gamma)}$$

$$\Rightarrow \frac{x^5 + 0x - 4}{(x+\gamma)(x-\gamma)(x+\gamma)}$$

$(x+5)(x+4)$ $\sqrt{(x^2-4)} = \sqrt{(x-4)(x+4)}$
 ١١ $\frac{x^2+1x+15}{x^2+2x+2} = \frac{\sqrt{x^2-4}}{x^2-2}$
 $(x+5)^2$ $(x-5)(x+5)$

$$\Rightarrow \frac{\cancel{(x+5)(x+4)}}{\cancel{(x+5)^2}} \times \frac{\cancel{(x-5)(x+5)}}{\sqrt{\cancel{(x-4)(x+4)}}} \Rightarrow \frac{(x-5)}{\sqrt{(x-4)}}$$

١١ $\frac{x^2y - \epsilon x^2y^2 - xy}{\sqrt{xy}}$
 $\sqrt{xy}$

$$\Rightarrow \frac{x^2y}{\sqrt{xy}} - \frac{\epsilon x^2y^2}{\sqrt{xy}} - \frac{xy}{\sqrt{xy}}$$

$$\Rightarrow \frac{xy}{\sqrt{y}} - \frac{\epsilon xy^2}{\sqrt{y}} - \frac{1}{\sqrt{y}}$$

٢ $\frac{\sqrt{abc^2} - 17\sqrt{abc} - 14a}{\sqrt{abc^2}} =$

$$\Rightarrow \frac{\sqrt{a^1b^1c^2}}{\sqrt{a^1b^1c^2}} - \frac{17\sqrt{a^1b^1c^1}}{\sqrt{a^1b^1c^2}} - \frac{14a}{\sqrt{a^1b^1c^2}} =$$

$$\Rightarrow \frac{\sqrt{bc^1}}{\sqrt{a^1}} - \frac{17}{a^1c^1} - \frac{1}{a^1b^1c^1}$$

$$\begin{array}{r}
 \cancel{u}^v \cancel{u}^r + \cancel{0}u + \cancel{V} \\
 \hline
 \cancel{-u}^r + \cancel{q}u \\
 \hline
 \cancel{-1}u + \cancel{V} \\
 \hline
 \cancel{+1}u + \cancel{r} \\
 \hline
 q
 \end{array}
 =
 \begin{array}{r}
 \cancel{u+V} \\
 \hline
 \cancel{u}^r - 1 \\
 \hline
 \times
 \end{array}
 +
 \begin{array}{r}
 \cancel{u+V} \\
 \hline
 \cancel{u}^r - 1 \\
 \hline
 \times
 \end{array}$$

$$\frac{u^r}{u} = u^r$$

$$\frac{-1u}{u} = -1$$

$$(u+r)(u^r-1) + q = u^r + 0u + V$$

$$\begin{array}{r}
 \cancel{u}^v - \cancel{u}^r + \cancel{u} + \cancel{1} \\
 \hline
 \cancel{-u}^r + \cancel{u}^r \\
 \hline
 u + 1 \\
 \hline
 -u + 1 \\
 \hline
 r
 \end{array}
 \quad
 \begin{array}{r}
 u-1 \\
 \hline
 u^r + 1
 \end{array}$$

$$\frac{u^r}{u} = u^r$$

$$\frac{u}{u} = 1$$

$$(u-1)(u^r+1) + r = u^r - u^r + u + 1$$

$$\begin{array}{r}
 \cancel{u}^v - \cancel{u} + \cancel{1} \\
 \hline
 \cancel{-u}^r + \cancel{u}^r \\
 \hline
 -1u^r - u + 1 \\
 \hline
 +1u^r + u \\
 \hline
 1u + 1 \\
 \hline
 -1u + 1 \\
 \hline
 -r
 \end{array}
 \quad
 \begin{array}{r}
 \cancel{u+V} \\
 \hline
 \cancel{u}^r - 1u + 1 \\
 \hline
 \times
 \end{array}$$

$$\frac{u^r}{u} = u^r$$

$$\frac{-1u^r}{u} = -1u$$

$$\frac{1u}{u} = 1$$

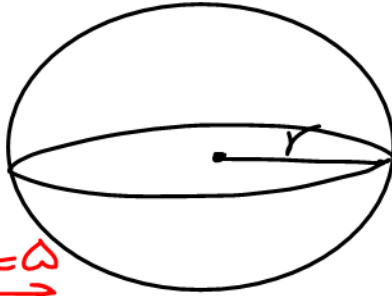
$$(u+r)(u^r-1u+1) - r = u^r - u + 1$$

$$\pi = 3.14$$

حجم و مساحت:

$$V = \frac{4}{3} \pi r^3 \Rightarrow \text{حجم کره}$$

$$S = 4 \pi r^2 \Rightarrow \text{مساحت کره}$$



$$\pi \approx 3$$

$$V = \frac{1}{3} \times \frac{4}{3} \pi r^3 \quad r=5$$

$$V = \frac{1}{3} \times \frac{4}{3} \times \pi \times 5^3 = 250$$

$$S = \frac{1}{2} \times 4 \pi r^2 \quad r=5 \quad S = \frac{1}{2} \times 4 \times \pi \times 5^2 = 2 \times 4 \times 25$$

$$S = 100$$

$$V = \frac{4}{3} \pi r^3$$

$$V = S$$

$$S = 4 \pi r^2$$

$$\frac{4}{3} \pi r^3 = 4 \pi r^2$$

$$r=1$$

$$\frac{r^3}{r^2} = \frac{4\pi}{4\pi}$$

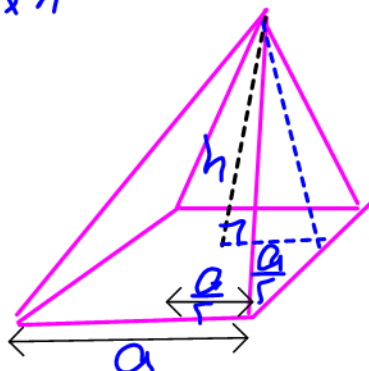
$$r = \frac{4\pi}{4\pi}$$

$$r = \frac{4\pi \times 1}{1 \times 4\pi} \rightarrow r = 1$$

حجم هرم

$$V = \frac{1}{3} \times \text{مساحت قاعده} \times \text{ارتفاع}$$

$$V = \frac{1}{3} \times S \times h$$



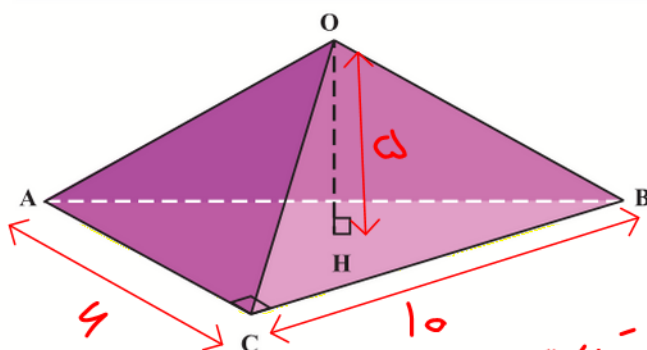
$$S = \text{مساحت قاعده}$$

$$h = \text{ارتفاع}$$

$$a^2 + b^2 = c^2$$



کار در کلاس



در هرم $OABC$ ، $AC = 6\text{ cm}$ و $BC = 10\text{ cm}$ و زاویه $\hat{ACB} = 90^\circ$ و OH ارتفاع هرم مساوی 5 cm است. با کامل کردن عبارت‌های زیر حجم هرم را به دست آورید.

$$S = \frac{1}{2} \times \text{ارتفاع} \times \text{قاعده}$$

$$V = \frac{1}{3} \times S \times h$$

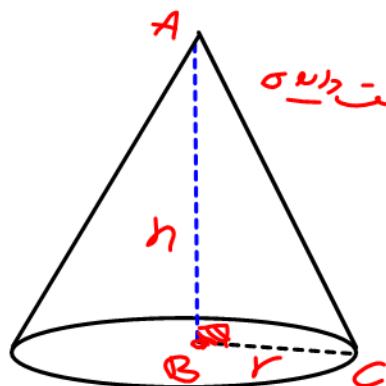
$$V = \frac{1}{3} \times 40 \times 5 = 66.67$$

$$V = 66.67 \text{ cm}^3$$

$$S_{ABC} = \frac{1}{2} \times AC \times BC$$

$$S_{ABC} = \frac{1}{2} \times 6 \times 10 = 30$$

$$S_{ABC} = 30$$



$$S = \pi r^2$$

حجم مخروط:

$$V = \frac{1}{3} \times \text{مساحت قاعده} \times \text{ارتفاع}$$

$$V = \frac{1}{3} \times \pi r^2 \times h$$

$$AB^2 + BC^2 = AC^2$$

$$AB^2 + 4^2 = 10^2$$

$$AB^2 = 100 - 16 = 84$$

$$AB^2 = 84$$

$$AB = \sqrt{84} = 1$$

$$AB = 1$$

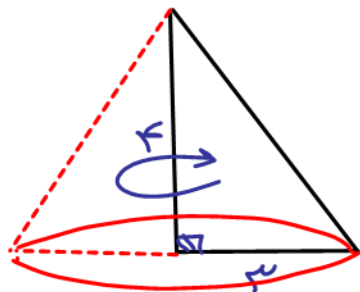
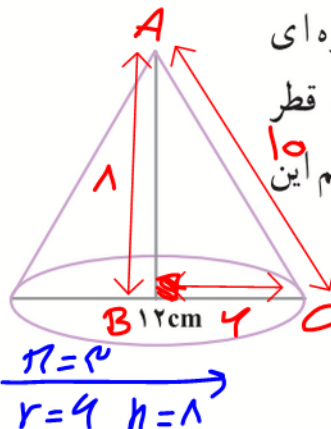
$$V = \frac{1}{3} \times \pi r^2 h$$

$$\Rightarrow V = \frac{1}{3} \times \pi \times 4^2 \times 1$$

$$\Rightarrow V = 16\pi \times 1 = 16\pi$$

$$V = 16\pi \text{ cm}^3$$

علی با قسمتی از دایره‌ای
به شعاع ۱۰ cm، مخروطی به قطر
قاعده ۱۲ cm ساخته است. حجم این
مخروط را به دست آورید.



$$V = \frac{1}{3} \times \pi r^2 h \quad \begin{matrix} h=5 \\ r=3 \end{matrix}$$

$$V = \frac{1}{3} \times \pi \times 3^2 \times 5$$

$$V = 9 \times 5 = 45$$

$$V = 45 \text{ cm}^3$$

$$y = mx + b$$

نسبت $\downarrow$ عرض از مبدأ $\downarrow$

$$(0, y)$$

$$x=0$$

$$(0, b)$$

عرض از مبدأ $\nearrow$

$$y=0$$

محلول از مبدأ $\nearrow$

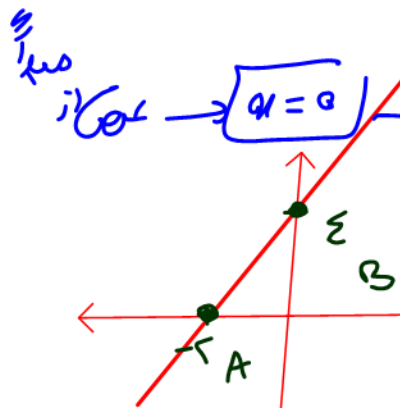
$$(a, 0)$$

$$2y - \Sigma x - \lambda = 0$$

$$2y - \Sigma x - \lambda = 0$$

حل اول $\rightarrow y = 0 \rightarrow 2(0) - \Sigma x - \lambda = 0$
 $0 - \Sigma x - \lambda = 0$

$$-\Sigma x = +\lambda \rightarrow x = \frac{\lambda}{-\Sigma} = -5 \rightarrow x = -5$$



$$2y - \Sigma x - \lambda = 0$$

$$2y - \Sigma(0) - \lambda = 0$$

$$2y - \lambda = 0 \rightarrow 2y = \lambda \rightarrow y = \frac{\lambda}{2} = 5 \rightarrow y = 5$$

حل ثان $(0, 5)$

$$2y - \Sigma x - \lambda = 0 \rightarrow y = mx + b$$

$$\frac{2y}{2} = \frac{+\Sigma x}{2} + \frac{\lambda}{2} \rightarrow y = \Sigma x + 5 \rightarrow m = 2$$

$$A(x_1, y_1) \rightarrow m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} \Rightarrow \text{معدل التغير}$$

$$B(x_2, y_2)$$

$$A(-5, 0)$$

$$B(0, 5)$$

$$m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 0}{0 - (-5)} = \frac{5}{5} = 1$$

$$m = -5$$

