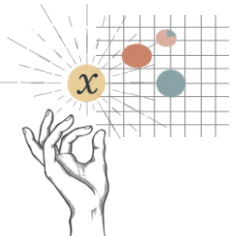


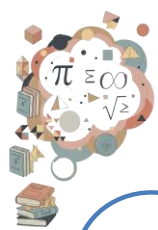
Revision on unit 1

prep 3

First term 2027

طريقك للذئابة الأرباب في المات





ASSESSMENT from the School Book

UNIT 1



Choose the correct answer

① Which of the following is equal to $(a^2)^4 \times a^5$?

(a) a^{11}

(b) a^{13}

(c) a^{40}

(d) a^{30}

$a^8 \times a^5 = a^{13}$

② If $\frac{3^x \times 2^x}{81^x} = 2^{-2x}$, what is the value of x ?

(a) 0

$\frac{3^x \times (3^2)^x}{(3^4)^x} = 2^{-2x}$

(c) 2

(d) -1

$27 = 3^3$
 $81 = 3^4$
 $\frac{27}{81} = \frac{3^3}{3^4} = \frac{1}{3}$

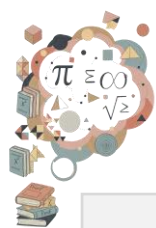
Mr. Abanoub



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طريقك للذئب ... الذئب في الناتج



$$\frac{4x}{3} = 2^{-2x}$$

$$\therefore 2 = 1$$

$$\therefore \frac{-2x}{-2} = \frac{0}{-2}$$

$$\therefore x = 0$$

3 If $3^x = b$, which of the following equals 9^{x+1} ?

(a) $27 b^2$

(b) $3 b^2$

(c) $9 b^2$

(d) $3b$

$$9^{x+1} = 9^x \times 9$$

$$(3^2)^x \times 9 \Rightarrow (3^2)^x \times 9 = 9b^2$$

$$\frac{9^x \times 9^1}{= 9^{x+1}}$$

4 If $4^x = 8$, what is the value of x ?

(a) 1

(b) 2

(c) $\frac{2}{3}$

(d) $\frac{3}{2}$

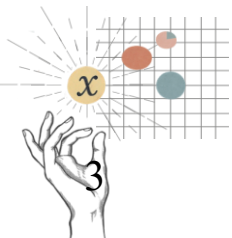
$$\left(\frac{2}{2}\right)^x = 2^3$$

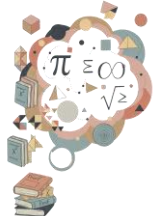
$$\frac{2x}{2} = \frac{3}{2}$$

$$\therefore \frac{2x}{2} = \frac{3}{2}$$

$$x = \frac{3}{2}$$

طريقة الأذن ... الأذن في المثلث





Complete the following

1 If $7^{x+1} = 5^{x+1}$, then x

$$x+1=0$$

$$x = -1$$

2 The simplified form of $\frac{(-2a^2)^3}{2a}$ is

$$\frac{-2^3 a^6}{2a} = -2^2 a^5 = (-4a^5)$$

3 If $5^{x-3} = 1$, then $2^x =$

$$x-3=0 \quad 2^3 = (8)$$

$$x=3$$

4 If $2^a + 2^a + 2^a = 24$, then $a =$

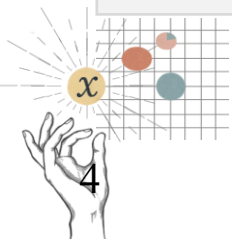
$$5+5+5=15$$

$$5 \times 3 = 15 \checkmark$$

$$2^a \times \frac{3}{3} = \frac{24}{3}$$

$$\Rightarrow 2^a = \frac{24}{3}$$

$$2^a = 8 \quad a=3$$





Answer the following question

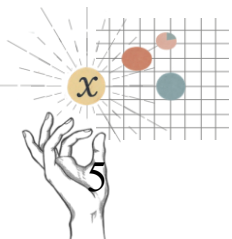
① If $2^x = 5$, find the value of $8^x - 3 \times 2^{x+2}$

$$\begin{aligned}
 & (2^3)^x - 3 \times 2^x \times 2^2 \\
 &= (\cancel{2}^x)^3 - 3 \times 5 \times 4 \\
 &= 5^3 - 60 = 125 - 60 = \boxed{75}
 \end{aligned}$$

② Simplify the expression $\frac{4^x \times 9^{2-x}}{6^{2x}}$, then find its value when $x = 1$

$$\begin{aligned}
 & \frac{(2^2)^x \times (3^2)^{2-x}}{(2 \times 3)^{2x}} = \frac{2^{2x} \times 3^{4-2x}}{2^{2x} \times 3^{2x}} = \frac{3^{4-2x-2x}}{3^{2x}} = \frac{3^{4-4x}}{3^{2x}} \\
 & \text{at } x=1 \Rightarrow \therefore 3^{4-4 \times 1} = 3^0 = \boxed{1}
 \end{aligned}$$

طريقه للذهاب الى الجواب





2, 3, 5, 7, 11, —

$$5^{x^2-4} = (5^3)^x \quad | \quad x^2-4 = 3x$$

$$\therefore 5^{x^2-4} = 5^{3x} \quad | \quad \therefore x^2-4-3x=0 \Rightarrow x^2-3x-4=0$$

$$(x+1)(x-4)=0$$

$$\therefore x+1=0 \quad | \quad x-4=0$$

$$x=-1 \quad | \quad x=4$$

4 Find the value of m if $3^{-2m+1} \times 9^{2m} = \frac{1}{27}$.

④ Find the value of m if $3^{-2m+1} \times 9^{2m} = \frac{1}{27}$

$$3^{-2m+1} \times (3^2)^{2m} = \frac{1}{3}$$

$$3^{-2m+1} \text{ (+) } 4m \quad \quad \quad 3^{-3}$$

$$3 \times 3 = 3$$

$$\begin{array}{r} -2m + 1 + 4m \\ 3 \end{array} = 3$$

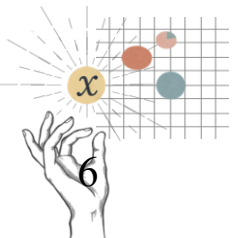
$$\therefore 2^m + 1 = -3$$

$$\Rightarrow \therefore 2m = -3 - 1 \rightarrow 2m = -4$$

$$m = \frac{-4}{2} = -2$$

negative sign $\leftarrow$ middle $\leftarrow$ greater $\leftarrow$ smaller

طريقاً للأمان... الأيبا في الأمان





Choose the correct answer

① If $(\sqrt{5})^x = 25$, then what is the value of x ?

(a) 2

(b) 4

(c) 6

(d) 8

$$(\sqrt{5})^x = (\sqrt{5})^4 \quad (x=4)$$

$$\sqrt{5} \times \sqrt{5} = (\sqrt{5})^2 = 5$$

$$25 = 5 \times 5 = (\sqrt{5})^2 \times (\sqrt{5})^2 = (\sqrt{5})^4$$

② If $\left(\frac{5}{3}\right)^x = \frac{27}{125}$, then what is the value of x ?

(a) -5

(b) -3

(c) 3

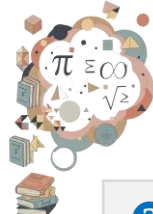
(d) 5

$$\left(\frac{5}{3}\right)^x = \frac{3^3}{5^3}$$

$$\Rightarrow \left(\frac{5}{3}\right)^x = \left(\frac{3}{5}\right)^3$$

$$\therefore x = -3$$





3 The solution set of the equation $(3^x)^x = 81$ in $\mathbb{R}$ is

(a) {9}

(b) {9, -9}

(c) {2}

☒ (d) {2, -2}

2, 3, 5, 7, ...

$$3^{x^2} = 81$$
$$\downarrow$$
$$(x^2) = (4)$$
$$x^2 = 4$$

$$\therefore x^2 = 4$$
$$\therefore x = \pm \sqrt{4}$$
$$\therefore x = \pm 2$$

$$\begin{array}{r|l} 81 & 3 \\ 27 & 3 \\ 9 & 3 \\ 3 & 3 \\ 1 & 3 \end{array}$$

$$x' \times x' = (x^2)$$

4 If $3 = 5^{x-1}$, then $5^x =$

(a) 9

☒ (b) 15

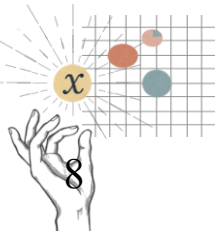
(c) 8

(d) 18

$$\frac{3}{1} = \frac{5^x}{5^1} \Rightarrow 5^x = 15$$

$$(81 = 3^4)$$

طريقه لاذناب ... الازدواج



5 If $((\underline{10})^2 \times 8)^4 = 2^a \times 5^b$, then $a + b = \dots\dots$

(a) 20

(b) 6

(c) 28

(d) 8

$$= \left((2 \times 5)^2 \times 2^3 \right)^4$$

$$= \left(\underline{2}^{\textcircled{2}} \times 5^2 \times \underline{2}^{\textcircled{3}} \right)^4$$

$$= \left(2^5 \times 5^{\textcircled{4}} \right)^4$$

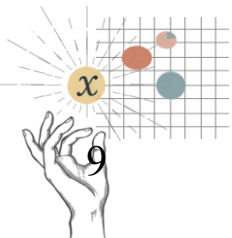
$$= 2^{\textcircled{20}} \times 5^{\textcircled{8}}$$

$$= 2^{\textcircled{a}} \times 5^{\textcircled{b}}$$

$$20 + 8 = 28$$

$$\begin{cases} a = 20 \\ b = 8 \end{cases}$$

طريقه للذئبان ... الأرباب في الماتج



If $\frac{(81)^x \times 4^x}{6^{2x} \times 3^{2x}} = 3^{y-1}$, find the value of y

$$\frac{(4^x)^x \times (2^2)^x}{(2 \times 3)^{2x} \times 3^{2x}} = 3^{y-1}$$

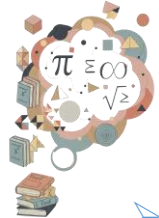
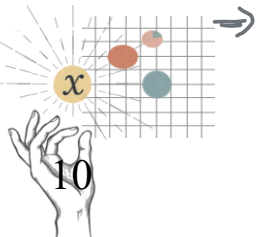
$$\frac{4^x \times 2^{2x}}{3^{2x} \times 3^{2x}} = 3^{y-1}$$

$$\frac{4^x \times 2^{2x}}{2^{2x} \times 3^{4x}} = 3^{y-1}$$

$$\Rightarrow 3^{y-1} = 1$$

$$\therefore y-1=0 \Rightarrow y=1$$

طريقه للذمان ... الارسال في المات



Find the solution set in $\mathbb{R}$

(a) $(32)^{x-3} = (8)^{2x+1}$

$$(2^5)^{x-3} = (2^3)^{2x+1}$$

$$\Rightarrow 2^{5x-15} = 2^{6x+3}$$

(b) $8^{x-1} \times 4^{2x+1} = 64$

$$(2^3)^{x-1} \times (2^2)^{2x+1} = 2^6$$

$$2^{3x-3} \times 2^{4x+2} = 2^6$$

$$2^{3x-3+4x+2} = 2^6$$

$$2^{7x-1} = 2^6$$

$$5x-15 = 6x+3$$

$$5x-6x = 3+15$$

$$-x = 18$$

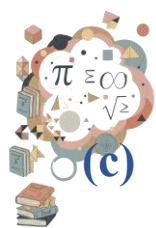
$$x = -18$$

$$\begin{array}{r|l} 32 & 2 \\ 16 & 2 \\ 8 & 2 \\ 4 & 2 \\ 2 & 2 \\ 1 & 2 \end{array}$$

$$32 = 2^5$$

طريقة الأضلاع...

$$\begin{array}{r|l} 64 & 2 \\ 32 & 2 \\ 16 & 2 \\ 8 & 2 \\ 4 & 2 \\ 2 & 2 \end{array}$$



$$7x - y = 6 \Rightarrow \therefore 7x = 7 \quad x = 1$$

(c) $8 \times 3^{x-2} = 27 \times 2^{x-2}$

$$2^3 \times 3^{x-2} = 3^3 \times 2^{x-2}$$

$$\Rightarrow \therefore \frac{3^{x-2}}{3^3} = \frac{2^{x-2}}{2^3}$$

$$\Rightarrow \therefore \frac{3^{x-2-3}}{3} = \frac{2^{x-2-3}}{2} \quad \therefore 3^{x-5} = 2^{x-5} \quad \therefore x-5=0 \quad \therefore x=5$$

$$\begin{aligned} 2a &= 3b \\ \frac{a}{b} &= \frac{3}{2} \end{aligned}$$

If $3^{2x-1} = 27$, $(\sqrt{7})^{x+y} = 49$, find $(\sqrt{5})^{x-y}$

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

$$2x-1=3$$

$$2x = 3+1$$

$$2x = 4$$

$$x=2$$

$$(\sqrt{7})^{2+y} = (\sqrt{7})^4$$

$$\therefore 2+y=4$$

$$\therefore y=4-2$$

$$\therefore y=2$$

$$\therefore (\sqrt{5})^{2-2}$$

$$= (\sqrt{5})^0$$

$$= 1$$

$$\begin{array}{c} 49 \\ \swarrow \quad \searrow \\ 7 \quad 7 \\ \swarrow \quad \searrow \quad \swarrow \quad \searrow \\ \sqrt{7} \quad \sqrt{7} \quad \sqrt{7} \quad \sqrt{7} \end{array}$$

طريقة الأضلاع



$$\sqrt{7} \times \sqrt{7} = (\sqrt{7})^2 = 7$$



If $a = 5^{30}$, $b = 3^{45}$, $c = 2^{60}$

arrange a, b and c in ascending order.

School book

$$a = (5^2)^{15} = (25)^{15}$$

$$b = (3^3)^{15} = (27)^{15}$$

$$c = (2^4)^{15} = (16)^{15}$$

$$\therefore c < a < b$$

طريقه الذكاء ... الارباع في الماده

Find

If the value of $n = \frac{8^{3n} \times 16^{n+1}}{32^{2n}} = 2^7$

$$\frac{(2^3)^{3n} \times (2^4)^{n+1}}{(2^5)^{2n}} = 2^7$$

$$\frac{2^{9n} \times 2^{4n+4}}{2^{10n}} = 2^7$$

$$\frac{2^{13n+4}}{2^{10n}} = 2^7$$

$$\frac{2^{13n+4}}{2^{10n}} = 2^7 \Rightarrow 2^{13n+4-10n} = 2^7$$

$$\Rightarrow 2^{3n+4} = 2^7$$

$$\therefore 3n + 4 = 7$$

$$\therefore 3n = 7 - 4$$

$$\therefore \cancel{3}n = \frac{3}{\cancel{3}}$$

$$\therefore n = 1$$

طريقه للذئبان ... الارباعه في الماده



Simplify to simplest form $\frac{((\sqrt{5})^3)^{2x} \times (15)^{x-1}}{(75)^x}$ **then find the value of the result at ($x=1$)**

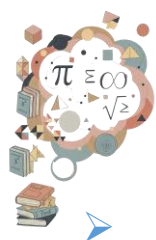
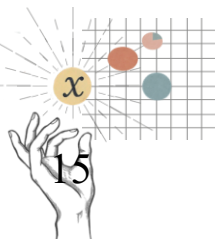
$$\begin{aligned} & \frac{(5)^{3x} \times (3 \times 5)^{x-1}}{(5^2 \times 3)^x} = \frac{5^{3x} \times 3^{x-1} \times 5^{x-1}}{5^{2x} \times 3^x} \\ & = \frac{5^{3x+x-1} \times 3^{x-1}}{5^{2x} \times 3^x} \\ & = 5^{4x-1-2x} \times 3^{x-1-x} \\ & = 5^{2x-1} \times 3^{-1} \end{aligned}$$

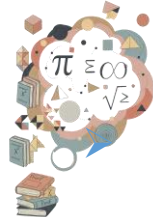
at $x=1 \Rightarrow 5^{2 \times 1 - 1} \times 3^{-1} = 5^1 \times \frac{1}{3} = \left(\frac{5}{3}\right)$

$$\begin{array}{r} 75 \mid 5 \\ 15 \mid 3 \\ 5 \mid 5 \\ 1 \end{array}$$

$(\sqrt{5})^{6x}$
 $(5)^{3x}$
 $75 = 5^2 \times 3$

طريقة الذئبة الأرباب في المنهج





Simplify to simplest form

$$\frac{(2a^5)^3 \times (3a^3)^2}{(6a^7)^2 \times (a^{-1})^3}$$

$$\frac{2^3 (a^{15}) \times 3^2 (a^6)}{6^2 (a^{14}) \times a^{-3}}$$

$$= \frac{2^3 \times 3^2 \times a^{18}}{(2 \times 3)^2 \times a^{11}}$$

$$= \frac{2^3 \times \cancel{3^2} \times a^{18}}{2^2 \times \cancel{3^2} \times a^{11}} = \boxed{2 a^7}$$

طريقه الذكاء الذكاء في المنهج



Find the solution set in $\mathbb{R}$

$$\left(\frac{3}{2}\right)^{5-3x} = \left(\frac{4}{9}\right)^{2x-7}$$

$$\left(\frac{3}{2}\right)^{5-3x} = \left(\frac{2^2}{3^2}\right)^{2x-7}$$

$$\left(\frac{3}{2}\right)^{5-3x} = \left(\left(\frac{2}{3}\right)^2\right)^{2x-7}$$

$$\left(\frac{3}{2}\right)^{5-3x} = \left(\frac{2}{3}\right)^{4x-14}$$

$$\left(\frac{2}{3}\right)^{-5+3x} = \left(\frac{2}{3}\right)^{4x-14}$$

$$\therefore -5 + 3x = 4x - 14$$

$$\therefore 3x - 4x = -14 + 5$$

$$-x = -9$$

$$x = 9$$

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طريقك للأمان... الأمان في المثلث

Find the solution set after equation in $\mathbb{R}$

$$2x^2 = 16^{3-x}$$

$$2x^2 = (2^4)^{3-x}$$

$$x^2 = 2^{12-4x}$$

$$\therefore x^2 = 12 - 4x$$

$$\therefore x^2 - 12 + 4x = 0 \Rightarrow x^2 + 4x - 12 = 0$$

middle

$$\begin{array}{r} 2 \times 6 \\ 3 \times 4 \\ 1 \times 12 \end{array}$$

$$\begin{array}{r|l} 16 & 2 \\ 8 & 2 \\ 4 & 2 \\ 2 & 2 \\ 1 & \end{array}$$

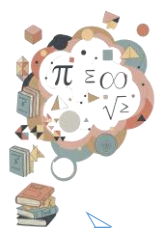
$$6 = 2^4$$

$$(x - 2)(x + 6) = 0$$

$$\begin{array}{l} x - 2 = 0 \Rightarrow x = 2 \\ \text{or} \\ x + 6 = 0 \Rightarrow x = -6 \end{array}$$

طريقه للذات ... اذنا في المثلث





Find the value of n

2, 3, 9, 7, 11

$$\frac{2^n \times 9^{n+1}}{18^n} = 3^n$$

$$\frac{2^n \times (3^2)^{n+1}}{(2 \times 3)^n} = 3^n$$

$$\frac{2^n \times 3^{2n+2}}{2^n \times 3^{2n}} = 3^n$$

$$\frac{2^n \times 3^{2n+2}}{2^n \times 3^{2n}} = 3^n$$

$$3^{2n+2-2n} = 3^n$$

$$\Rightarrow 3^2 = 3^n$$

$$(n=2)$$

$$\begin{array}{r|l} 18 & 2 \\ 9 & 3 \\ 3 & 3 \\ 1 & \end{array}$$

$$18 = 2 \times 3^2$$

طريقه للذئبان ... الذئبان في الناتج





Choose the correct answer

① If $3^x + 3^x = 6$ then, what is the value of x ?

(a) 2

(b) 1

(c) 9

(d) 3

$$3^x \times 2 = 6$$

$$\therefore \frac{3^x}{3} = \frac{6}{2}$$

$$3^{(x)} = 3^{(1)}$$

$$\therefore x = 1$$

$$3 + 3 = 6$$

$$3 \times 2 = 6$$

② If $5^{2x-1} = \left(\frac{1}{5}\right)^{-7}$, what is the value of x ?

(a) 3

(b) 2

(c) 5

(d) 4

$$5^{2x-1} = (5)^7$$

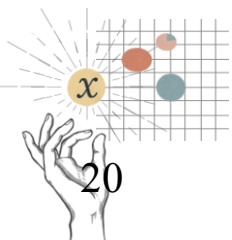
$$\therefore 2x - 1 = 7$$

$$\therefore 2x = 7 + 1$$

$$\therefore \frac{2x}{2} = \frac{8}{2}$$

$$\therefore x = 4$$

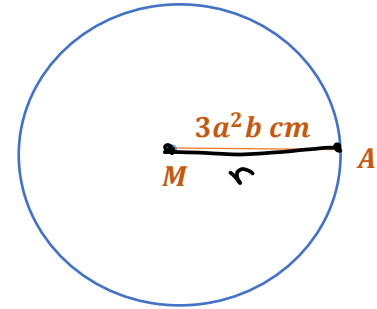
طريقه للذائقه الايسر في المنهج



Find the area of the circle

$$\text{Circumference} = 2\pi r$$

$$\begin{aligned} \text{area} &= \pi r^2 \\ &= \pi \times (3a^2b)^2 \quad r \rightarrow \text{radius} \\ &= \pi \times 3^2 a^4 b^2 \\ &= \pi \times 9a^4 b^2 \\ &= 9a^4 b^2 \pi \text{ cm}^2 \end{aligned}$$



طريقك للذائقه الذائقه في المات

In the opposite figure:

If the perimeter of the equilateral triangle equals the perimeter of the square, what is the side length of each of them?

school book

$\therefore$ Perimeter of the square = perimeter of the equilateral triangle

$$4 \times 6 \times 2^{x+2} = 3 \times 8^{x+1}$$

$$24 \times 2^{x+2} = 3 \times (2^3)^{x+1}$$

$$24 \times 2^{x+2} = 3 \times 2^{3x+3}$$

$$\Rightarrow \frac{24}{3} = \frac{2^{3x+3}}{2^{x+2}}$$

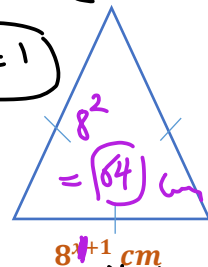
$$\Rightarrow 8 = 2^{3x+3-x-2}$$

side length of square
 $= 6 \times 2^3$
 $= 6 \times 8 = 48 \text{ cm}$
 $6 \times 2^{x+2} \text{ cm}$

$$\therefore 2x+1 = 3$$

$$\therefore \frac{2x}{2} = \frac{2}{2}$$

$$x = 1$$



$$\therefore 8 = 2^{2x+1}$$

$$\therefore 2^3 = 2^{2x+1}$$

طريقه الذكاء الارباع في المثلث

