

A

CEVAP 1)E

$$\begin{aligned} \ln x - \ln y &= 4 \\ + \quad 2 \ln x + \ln y &= 5 \\ \hline 3 \ln x &= 9 \Rightarrow \ln x = 3 \\ \ln y &= -1 \\ \ln x + \ln y &= 3 - 1 = 2 \end{aligned}$$

YANIT "E"

CEVAP 2)A

$$z = -7 + 24i$$

A seçeneği denenirse;

$$(3 + 4i)^2 = 9 + 24i - 16 = -7 + 24i \text{ elde edilir.}$$

YANIT "A"

CEVAP 3)D

$$\begin{aligned} \log_2 3 \cdot \log_3 5 &= a \cdot b \Rightarrow \log_2 5 = ab \\ \log 2 \cdot \log_2 5 &= 0,301 \cdot ab \Rightarrow \log 5 = a \cdot b \cdot 0,301 \\ \Rightarrow \log \frac{10}{2} &= a \cdot b \cdot 0,301 \Rightarrow \log 10 - \log 2 = a \cdot b \cdot 0,301 \\ \Rightarrow 1 - 0,301 &= ab \cdot 0,301 \Rightarrow ab = \frac{1 - 0,301}{0,301} \\ \Rightarrow \frac{1000 - 301}{301} &= \frac{699}{301} \end{aligned}$$

YANIT "D"

CEVAP 4)A

$$\begin{aligned} \Delta \\ A(ABC) &= S = \frac{|AB| \cdot |AC|}{2} \\ S &= \frac{\log_3 64 \cdot \log_4 3}{2} = \frac{\log_3 4^3 \cdot \log_4 3}{2} \\ S &= \frac{3 \log_3 4 \cdot \log_4 3}{2} = \frac{3}{2} \end{aligned}$$

YANIT "A"

CEVAP 5)A

$$\begin{aligned} z &= 1 + \cos 10^\circ + i \cdot \sin 10^\circ \\ z &= 1 + 2 \cos^2 5^\circ - 1 + i \cdot 2 \sin 5^\circ \cdot \cos 5^\circ \\ z &= 2 \cos 5^\circ (\cos 5^\circ + i \cdot \sin 5^\circ) \\ \text{olacağından } \text{Arg}(z) &= 5^\circ \text{ dir.} \end{aligned}$$

YANIT "A"

CEVAP 6)C

$$\frac{49 \cdot 50 \cdot 51}{3} = 41650$$

$$1 \cdot 2 = 2$$

$$41650 - 2 = 41648$$

YANIT "C"

CEVAP 7)C

$$\begin{aligned} f(x) &= 2 + 3^{x+1} \Rightarrow y = 2 + 3^{x+1} \\ \Rightarrow x &= 2 + 3^{y+1} \Rightarrow x - 2 = 3^{y+1} \\ \Rightarrow \log_3(x - 2) &= y + 1 \Rightarrow y = \log_3(x - 2) - 1 \\ \Rightarrow y &= \log_3(x - 2) - \log_3 3 \\ \Rightarrow y &= \log_3 \frac{x - 2}{3} \Rightarrow f^{-1}(x) = \log_3 \frac{x - 2}{3} \end{aligned}$$

YANIT "C"

CEVAP 8)C

$$\begin{aligned} 6^{\log_6 7} - e^{\ln 9} + 2(5)^{2 \log_5 2} &= \log_2 x \\ \Rightarrow 7 - 9 + 2 \cdot 4 &= \log_2 x \\ \Rightarrow \log_2 x &= 6 \Rightarrow x = 2^6 = 64 \end{aligned}$$

YANIT "C"

CEVAP 9)E

$$2 - \log_3(x-1) \geq 0 \quad \wedge \quad x-1 > 0$$

$$\log_3(x-1) \leq 2 \quad \wedge \quad x > 1$$

$$x-1 \leq 9$$

$$x \leq 10$$

$$\Rightarrow 1 < x \leq 10$$

**YANIT "E"**

CEVAP 10)D

$$\begin{aligned} & \left( \frac{2+3i}{3-2i} \right)^{27} - i \left( \frac{1+i}{1-i} \right)^{17} \\ &= \left[ \frac{(2+3i)(3+2i)}{(3-2i)(3+2i)} \right]^{27} - i \left[ \frac{(1+i)(1+i)}{(1-i)(1+i)} \right]^{17} \\ &= \left( \frac{6+4i+9i-6}{9+4} \right)^{27} - i \left( \frac{1+2i-1}{1+1} \right)^{17} \\ &= \left( \frac{13i}{13} \right)^{27} - i \left( \frac{2i}{2} \right)^{17} = i^{27} - i \cdot i^{17} \\ &= i^{27} - i^{18} = i^3 - i^2 = -i - (-1) = 1 - i \end{aligned}$$

**YANIT "D"**

CEVAP 11)A

Kökleri  $4+i$  ile  $4-i$  olan ikinci dereceden denklemler,

$$[x - (4+i)][x - (4-i)] = 0$$

$$x^2 - [(4+i) + (4-i)]x + (4+i) \cdot (4-i) = 0$$

$$x^2 - 8x + 4^2 - i^2 = 0$$

$$x^2 - 8x + 4^2 - (-1) = 0$$

$$x^2 - 8x + 17 = 0 \text{ dir.}$$

Cevap **A**

CEVAP 12)A

$$\log_3 9! = \log_3 9 \cdot 8! = \log_3 9 + \log_3 8!$$

$$= \log_3 3^2 + x = 2 + x$$

**YANIT "A"**

CEVAP 13)E

$$a = \log_3 10 \Rightarrow a = \frac{1}{\log_{10} 3}$$

$$b = \log_4 10 \Rightarrow b = \frac{1}{\log_{10} 4}$$

$$c = \log_5 10 \Rightarrow c = \frac{1}{\log_{10} 5}$$

$$\Rightarrow \log_{10} 3 < \log_{10} 4 < \log_{10} 5 \Rightarrow c < b < a$$

**YANIT "E"**

CEVAP 14)E

$$\left. \begin{aligned} z_1 &= -12 = 12 \text{ cis } \pi \\ z_2 &= 3 \text{ cis } \frac{\pi}{3} \end{aligned} \right\} \text{ ise}$$

$$z = z_1 \cdot z_2 = 36 \text{ cis } \left( \pi + \frac{\pi}{3} \right)$$

$$z = 36 \text{ cis } \frac{4\pi}{3}$$

$$z = 36 \text{ cis } 240^\circ \text{ dir.}$$

$$w_0 = \sqrt{|z|} \cdot \text{cis } \frac{\theta}{2} \text{ den}$$

$$w_0 = \sqrt{36} \cdot \text{cis } 120^\circ \text{ den}$$

$$w_0 = 6 \left( -\frac{1}{2} + \frac{\sqrt{3}}{2} i \right)$$

$$w_0 = -3 + 3\sqrt{3} i$$

$$w_1 = -w_0 \text{ dan}$$

$$w_1 = 3 - 3\sqrt{3} i \text{ bulunur.}$$

**YANIT "E"**

CEVAP 15)D

$$\log_2 x = t \text{ olsun.}$$

$$t^2 - 6t + 8 = 0$$



Çarpanları  $-4, -2$ ; kökleri  $4, 2$  olup

$$t = 4 \Rightarrow \log_2 x = 4 \Rightarrow x = 16$$

$$t = 2 \Rightarrow \log_2 x = 2 \Rightarrow x = 4$$

$$\left. \begin{aligned} t = 4 \Rightarrow \log_2 x = 4 \Rightarrow x = 16 \\ t = 2 \Rightarrow \log_2 x = 2 \Rightarrow x = 4 \end{aligned} \right\} 16+4=20$$

**YANIT "D"**

CEVAP 16)B

$$x^2 + y^2 = 101 \quad (1)$$

$$\log x + \log y = 1$$

$$\log(x \cdot y) = 1$$

$$\log(x \cdot y) = \log 10 \Rightarrow x \cdot y = 10 \quad (2)$$

$$(x + y)^2 = x^2 + y^2 + 2xy \quad (1 \text{ ve } 2 \text{ den})$$

$$(x + y)^2 = 101 + 20 = 121 \Rightarrow (x + y) = 11$$

bulunur.

$$\text{Öyleyse } \log_{121}(x + y) = \log_{121} 11$$

$$= \log_{11^2} 11 = \frac{1}{2} \text{ olur.}$$

YANIT "B"

CEVAP 17)C

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

$$y = 3^{2x+1} \Rightarrow 2x + 1 = \log_3 y$$

$$2x = \log_3 y - 1$$

$$x = \frac{1}{2} (\log_3 y - 1)$$

Yani

$$f^{-1}(x) = \frac{1}{2} (\log_3 x - 1) \text{ bulunur.}$$

$$f^{-1}(\sqrt{3}) = \frac{1}{2} (\log_3 \sqrt{3} - 1) = \frac{1}{2} \left( \frac{1}{2} - 1 \right)$$

$$= \frac{1}{2} \cdot \left( -\frac{1}{2} \right) = -\frac{1}{4} \text{ bulunur.}$$

YANIT "C"

CEVAP 18)C

$$(\bar{z}+1)(1+i)+z=8+4i$$

$$\bar{z}+\bar{z} \cdot i+1+i+z=8+4 \cdot i$$

$$(\overline{x+iy})+(\overline{x+iy}) \cdot i+1+i+x+iy=8+4 \cdot i$$

$$x-iy+(x-iy) \cdot i+1+i+x+iy=8+4 \cdot i$$

$$x-iy+x \cdot i-i^2 y+1+i+x+iy=8+4 \cdot i$$

$$x-iy+x \cdot i+y+1+i+x+iy=8+4 \cdot i$$

$$(x+y+1+x)+(-y+x+1+y) \cdot i=8+4 \cdot i$$

$$(2x+y+1)+(x+1) \cdot i=8+4 \cdot i$$

Karmaşık sayıların eşitliğinden,

$(2x + y + 1 = 8 \text{ ve } x + 1 = 4)$  ise  $(x = 3 \text{ ve } y = 1)$  dir.

Buna göre,  $\text{Re}(z) \cdot \text{Im}(z) = x \cdot y = 3 \cdot 1 = 3$  tür.

Cevap C

CEVAP 19)D

$$z = 3 \cdot (\sin 66^\circ + i \cos 66^\circ) = 3 \cdot (\cos 24^\circ + i \sin 24^\circ) \text{ dir.}$$

$$v = 2 \cdot (\cos 56^\circ - i \sin 236^\circ) = 2 \cdot (\cos 56^\circ + i \sin 56^\circ) \text{ dir.}$$

$$w = \cos 2^\circ + i \sin 2^\circ = 1 \cdot (\cos 2^\circ + i \sin 2^\circ) \text{ dir.}$$

$$T = \frac{3 \cdot (\cos 24^\circ + i \sin 24^\circ) \cdot 2 \cdot (\cos 56^\circ + i \sin 56^\circ)}{1 \cdot (\cos 2^\circ + i \sin 2^\circ)}$$

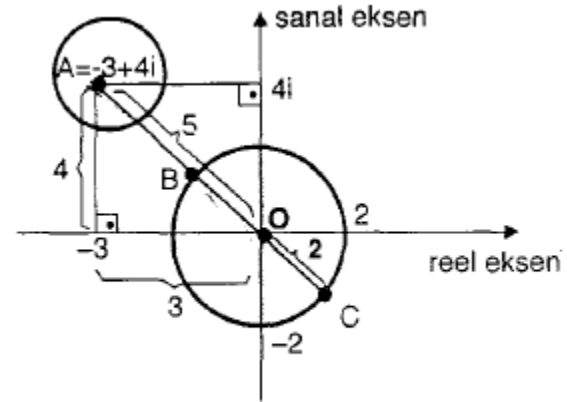
$$= \frac{3 \cdot 2}{1} \cdot [\cos(24^\circ + 56^\circ - 2^\circ) + i \sin(24^\circ + 56^\circ - 2^\circ)]$$

$$= 6 \cdot (\cos 78^\circ + i \sin 78^\circ) \text{ dir.}$$

Buna göre, T karmaşık sayısının kutupsal koordinatları,  $(6, 78^\circ)$  dir.

Cevap D

CEVAP 20)D



YANIT "D"