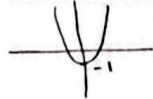


۱۱، ۷۵

$y^3 = 2x^2 - 1$ $y_1^3 = 2x_1^2 - 1$ if $x_1 = x_2 \Rightarrow y_1^3 = y_2^3$ $y_1 = y_2$ ✓
 $y_2^3 = 2x_2^2 - 1$ ✓
 تابع است $y = -y_2 \pm \sqrt{\Delta}$
 $\Delta = y_2^2 - 4(y_2^2 + 1) = y_2^2 - 4y_2^2 - 4 = -3y_2^2 - 4$
 $y_1 = -y_2 \pm \sqrt{-3y_2^2 - 4}$
 $y_1^3 + y_2^3 = 3x_1^2 - 1$ $y_1^3 + y_2^3 = 3x_2^2 - 1$ if $x_1 = x_2$ $y_1^3 + y_2^3 = y_1^3 + y_2^3 \Rightarrow y_1^3 - y_2^3 + y_1^3 - y_2^3 = 0$
 $y_1^3 + y_2^3 = 3x_2^2 - 1$ $y_1^3 + y_2^3 = 3x_1^2 - 1$ $(y_1 - y_2)(y_1^2 + y_1y_2 + y_2^2) + (y_1 - y_2)(y_1^2 + y_2^2 + y_1y_2) = 0$
 $\Rightarrow (y_1 - y_2)(y_1^2 + y_2^2 + y_1y_2 + y_1^2 + y_2^2 + y_1y_2) = 0$

$y = x^2 - 1$ به روش شکل



تابع است

$|y| + x^2 = x^2 + 1 \Rightarrow x = 0 \Rightarrow |y| = 1 \Rightarrow y = \pm 1$

تابع نیست

$y^3 + x^3 = 2x - 1 \Rightarrow y^3 = 2x - 1 - x^3 \Rightarrow y = \sqrt[3]{2x - 1 - x^3}$

تابع است

$\sqrt[3]{y} + \sqrt[3]{x} = 2 \Rightarrow \sqrt[3]{y} = 2 - \sqrt[3]{x} \Rightarrow y = (2 - \sqrt[3]{x})^3$ تابع است

الف) $\tan \frac{\pi}{4}$ $\frac{\pi}{4} = 45^\circ$ $\tan 45^\circ = \sqrt{3}$

$\tan = \frac{\sin}{\cos} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$

ب) $\cot \frac{5\pi}{4}$ $\frac{5\pi}{4} = 225^\circ$

$\cot = \frac{\cos}{\sin} = \sqrt{3}$

2) $\tan 330^\circ$

✓

$\tan = \frac{\sin}{\cos} \Rightarrow \frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}}$

3) $\cot 180^\circ$

$\cot = \frac{\cos}{\sin} = \frac{-1}{0} \Rightarrow$ تعریف نشده

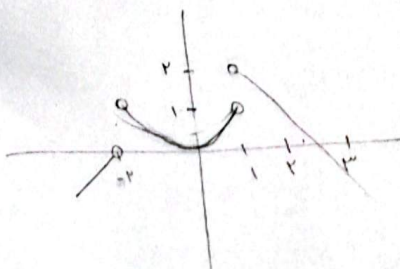
الف) $\sin \alpha = \frac{1}{2}$

$\alpha = \frac{\pi}{6}, \frac{5\pi}{6}$

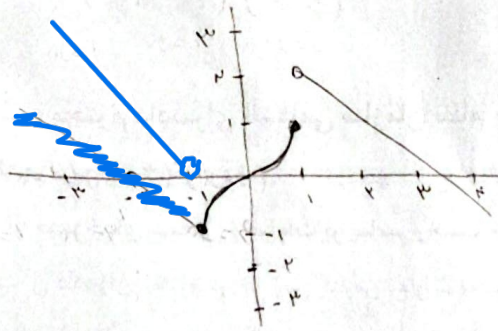
✓

ب) $\cos \alpha = \frac{\sqrt{2}}{2}$

$\alpha = \frac{\pi}{4}, \frac{7\pi}{4}$



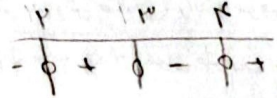
✓



1.25

6

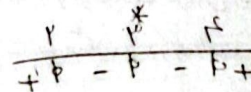
ا) $y = (x-2)(x-3)(x-5)$
 $x=2 \quad x=3 \quad x=5$



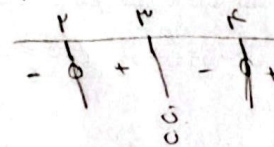
7

ب) $y = (x-2)(x-3)^2(x-5)$
 $x=2 \quad x=3 \quad x=5$

Ⓟ ✓



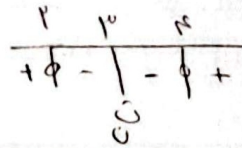
ا) $\frac{(x-2)(x-5)}{(x-3)}$ $x=2 \quad x=5$
 $x=3$



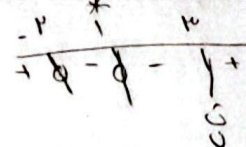
Ⓟ ✓

8

ب) $\frac{(x-2)(x-5)}{(x-3)^2}$ $x=2 \quad x=5$
 $x=3$



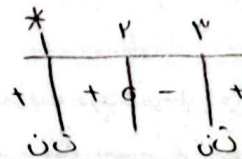
ا) $y = \frac{x^2 - 4x + 4}{x^2 - 3} = \frac{(x-1)^2(x+2)}{(x-3)}$ $x=1 \quad x=-2$
 $x=3$



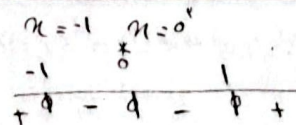
Ⓟ ✓

9

ب) $y = \frac{(x-1)(x-2)}{(x-1)(x-3)} \Rightarrow x=1 \quad x=2$
 $x=1 \quad x=3$



ا) $\frac{x^2(x^2-1)}{x^2+x+2} = \frac{x^2(x-1)(x+1)}{x^2+x+2}$ $x=1 \quad x=-1 \quad x=0$
 $\Delta < 0$ $\Delta > 0$



Ⓟ ✓

10

ب) $\frac{x^2 + 3x + 2}{x^2 + 4x + 3}$