Date: Sub:

(۲۵)

۳۰ سوال –

الجزء الثاني

1. $\lim_{x\to 1} \frac{4x^2-7x+3}{3x^2-5x+2} = \frac{(4x-3)(x-1)}{(x-1)(3x-2)} = \frac{4x-3}{3x-2}$ (۵)

$\frac{4-3}{3-2} = \frac{1}{2}$

---

2. $\lim_{x\to 0} \frac{|2x-1|-|2x+1|}{x} = \lim_{x\to 0} \frac{-2x+1-2x-1}{x} = \frac{-4x}{x} = -4$ (۵)

---

3. $\lim_{x\to 4} \frac{x-4}{\sqrt{x}-2} \to \frac{(\sqrt{x}+2)(\sqrt{x}-2)}{(\sqrt{x}-2)} = \sqrt{x}+2 \to 2+2 = 4$ (۵)

---

4. $\lim_{x\to 2} \frac{x-\sqrt{2x}}{2x^2-x-6}$ مزدوج $\to \frac{1-1/\sqrt{2x}}{4x-1}$ جایگذاری $\to \frac{1-1/2}{7} = \frac{1}{14}$ (۵)

---

5. $\lim_{x\to 1} \frac{1-\sqrt{x}}{2-\sqrt{5-x}}$ مشتق $\to \frac{-1/2\sqrt{x}}{1/2\sqrt{5-x}} \Rightarrow \lim_{x\to 1} -\frac{\sqrt{5-x}}{\sqrt{x}} = -2$ (۵)

---

6. $\lim_{x\to 4} \frac{\sqrt{2x+4}-4}{\sqrt[3]{5x+7}-3} \times \frac{\sqrt[3]{(5x+7)^2}+9+3\sqrt[3]{5x+7}}{\sqrt[3]{(5x+7)^2}+9+3\sqrt[3]{5x+7}} \times \frac{\sqrt{2x+4}+4}{\sqrt{2x+4}+4} =$ (۵)

$\frac{12(2x+4-16)}{8(5x+7-27)} = \frac{12(2x-12)}{8(5x-20)} = \frac{8(x-6)}{40(x-4)} = \frac{8}{40} = 0.2$

Date: Sub:

.7 $\lim_{x\to 1} \frac{\sqrt{x+\sqrt{x}-1}}{\sqrt[3]{x-1}} \times \frac{\sqrt[3]{x^2}+1+\sqrt[3]{x}}{\sqrt[3]{x^2}+1+\sqrt[3]{x}} \times \frac{\sqrt{x+\sqrt{x}+1}}{\sqrt{x+\sqrt{x}+1}}$ (۶)

$\hookrightarrow \frac{x(x+\sqrt{x}-1)}{x-1} \xrightarrow{\text{مشتق}} \frac{x\left(x+\frac{1}{2\sqrt{x}}\right)}{1} = \frac{21}{8}$

.8 $\lim_{x\to\pi} \frac{1+\cos^2 x}{\sin^2 x} \to \lim_{x\to\pi} \frac{(1+\cot)(1-\cos+\cos^2)}{(1+\cos)(1-\cos)} =$ (۶)

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

.9 $\lim_{x\to\frac{\pi}{4}} \frac{1-\tan x}{\sin x-\cos x} \to \frac{\cos-\sin/\cos}{-\cos x+\sin x} = \frac{1}{-\cos}$ (۵)

$\hookrightarrow \lim_{x\to\frac{\pi}{4}} \frac{1\cdot}{-\cos\pi} = \frac{1/1}{-\sqrt{2}/2} = -\sqrt{2}$

.10 $\lim_{x\to\frac{\pi}{4}} \frac{\tan^2 x-1}{\cos^2 x} \to \frac{-1+\tan^2 x/1}{1-\tan^2 x/1+\tan^2 x} = \frac{-1-\tan^2 x}{1}$ (۵)

$\hookrightarrow \lim_{x\to\frac{\pi}{4}} \frac{-1-\tan^2 x}{1} = -2$

PITICO