

Web Demo:
www.solvegpt.net/

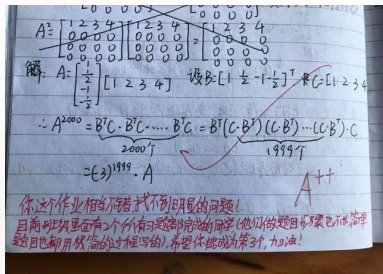
Smart Printer—— Automated marking machine for paper-based homework



Background

Homework

Homework



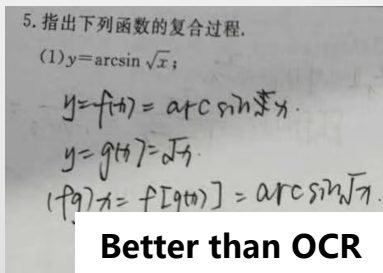
Mark by teacher



Spending several
Hours each day
Pointing out
errors on every
question

Machine

Multi-modality



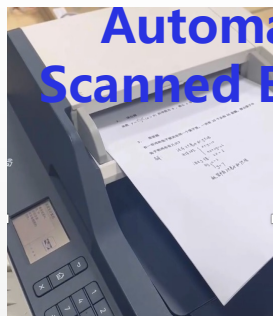
Compare Answer



Correct **100**
assignments in **1**
minute, printing
onto paper

Process

1. Scanned by Printer



Automatically
Scanned By Printer

1. 选择题
已知在△ABC中，∠A=30°，∠B=40°，则其斜边为（C）。
A. 3 B. 4 C. 5 D. 6

2. 填空题
直角三角形中，两直角边长度分别为3和4，则其斜边为 5。

3. 简答题
直角三角形中，两直角边长度分别为3和4，求其斜边长度。
已知两直角边之和为7，根据勾股定理可得：斜边长度为5。

Fast Scan

2. Enter Correct Answer



Save Paper

3. Assemble Prompt



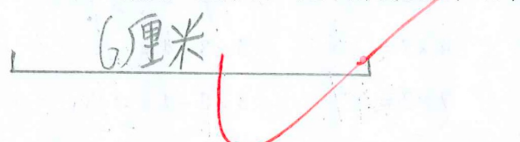
Prompt

4. Multi-modality

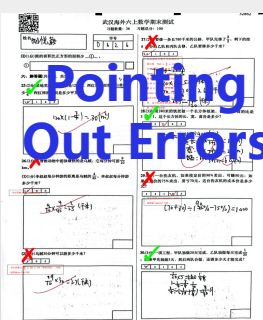
Whether answer in
picture is 6?

五、动手画一画。（6分）

1. 画一条比2厘米长4厘米的线段。（3分）



5. Form pdf by Tex



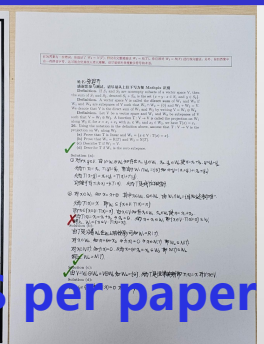
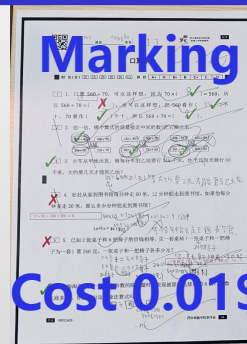
Pointing
Out Errors

1. 题目1
已知椭圆 $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ 的左焦点为 F ，右焦点为 F' ，点 P 为椭圆上一点，且 $PF = 2$ ，求 PF' 的值。

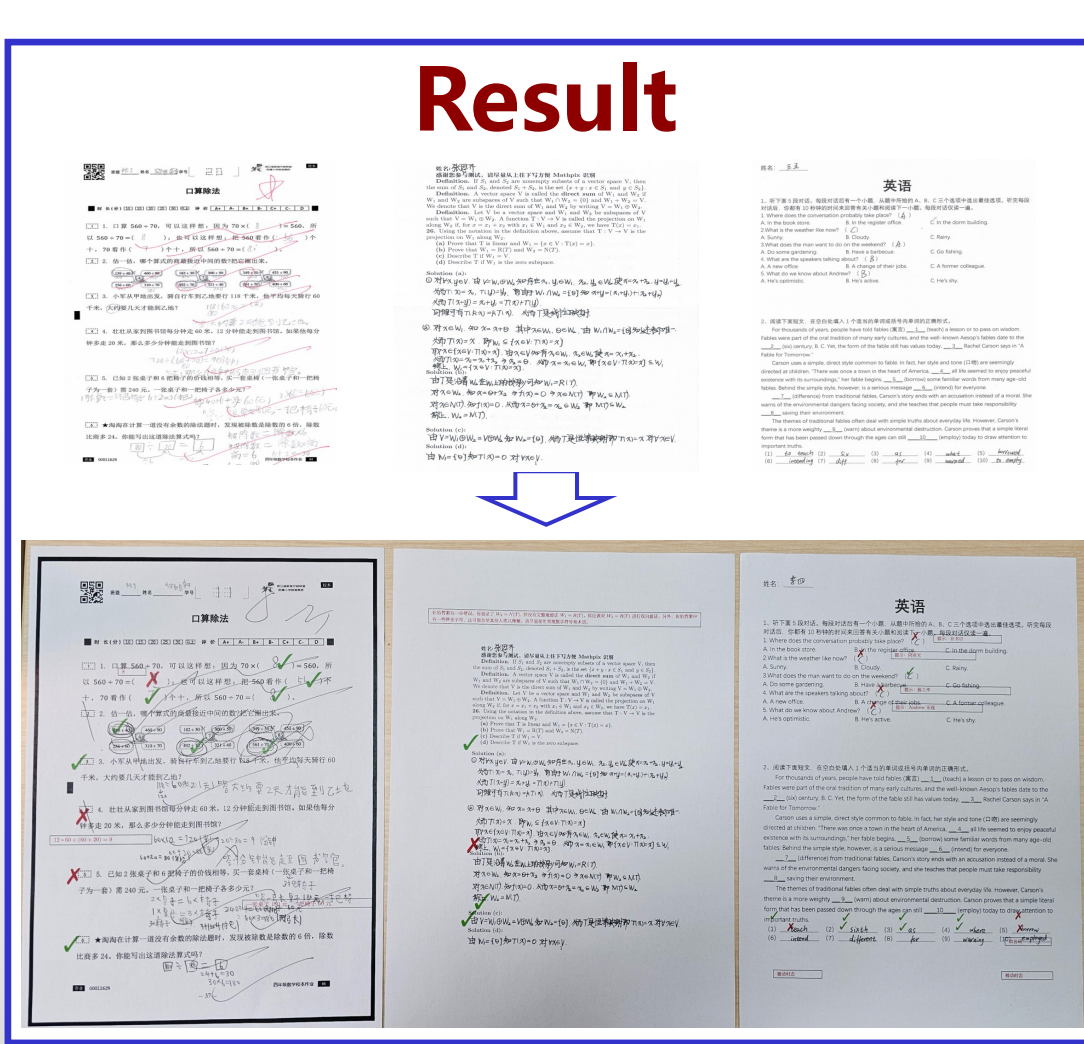
2. 题目2
设 a, b 满足 $a^2 + b^2 = 1$ ，求 $a^2 - 2b^2$ 的最大值。

3. 题目3
已知数列 $\{a_n\}$ 中， $a_1 = 1$ ，设 S_n 为 $\{a_n\}$ 的前 n 项和，求 S_n 的表达式。

6. Print by Printer



Cost 0.01\$ per paper



Advantages

Existing limitations:
Accuracy of
OCR(Mathpix,Abbyy)
Below 80%

Our Method:
Accuracy of
Multi-modality
Above 90%

High Accuracy

Existing limitations:
Marking for 100
homework
1-2 hours

Our Method:
Parallel grading
Print results
5 minutes

Practical

Existing limitations:
Teacher Bias
Carelessness
Only right or wrong

Our Method:
Absolutely neutral
Careful correction
Pointing out errors

Better for student

Pilot Program Participant 1

Pilot 1: Zhejiang University Calculus

5. 指出下列函数的复合过程.

(1) $y = \arcsin \sqrt{x}$
 $u = \sqrt{x}$
 $z = \sqrt{x}$

(2) $y = \cos(\frac{1}{x-1})$
 $u = \frac{1}{x-1}$
 $z = x-1$

(3) $y = \sin^2(\ln x)$
 $u = \ln x$
 $z = x$

6. 求下列函数的反函数.

(1) $y = \sqrt{1-x}$, $x \in [0, 1]$
 $y = 1-x^2$

(2) $y = \frac{x}{1+x^2}$, $x \geq 0$
 $y = \frac{1}{2} \ln \frac{1+y}{1-y}$

(3) $y = \arcsin(\ln x)$
 $u = \ln x$
 $z = x$

Marking 150 Homework Per week
Overall Correct Percentage **89%**

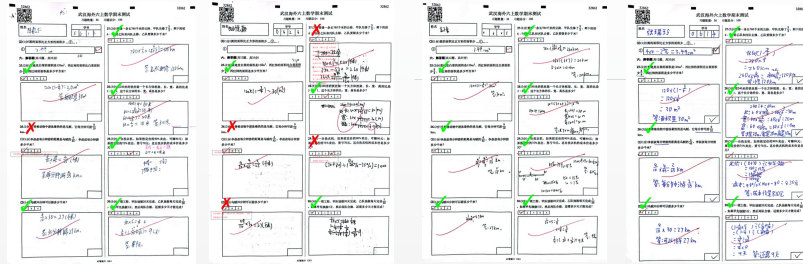
1 作业批改	2 作业批改	3 作业批改
1.1 名称 221018 Problem 5.1	2.1 名称 221018 Problem 5.1	3.1 名称 221018 Problem 5.1
1.2 题目 求函数 $y = \arcsin \sqrt{x}$ 的反函数.	2.2 题目 求函数 $y = \frac{x}{1+x^2}$ 的反函数.	3.2 题目 求函数 $y = \arcsin(\ln x)$ 的反函数.
1.3 正确答案 $f(x) = \arcsin \sqrt{x}$, $g(x) = \sqrt{x}$, $(f \circ g)(x) = \arcsin(\sqrt{x})$.	2.3 正确答案 $f(x) = \frac{1}{2} \ln \frac{1+y}{1-y}$, $g(y) = \frac{1}{2} \ln \frac{1+y}{1-y}$.	3.3 正确答案 $f(x) = \arcsin(\ln x)$, $g(x) = \ln x$, $h(x) = x^2$, $(f \circ g \circ h)(x) = \arcsin(\ln x^2)$.
1.4 学生答案 $y = \arcsin \sqrt{x}$ $(f \circ g)(x) = \arcsin \sqrt{x}$	2.4 学生答案 $y = \frac{x}{1+x^2}$	3.4 学生答案 $y = \arcsin(\ln x)$
1.5 是否正确 错误	2.5 是否正确 正确	3.5 是否正确 正确
1.6 错误 在定义 $f(x)$ 时, 学生答案中的 x 多余, 应该是 $f(x) = \arcsin x$.	2.6 错误 学生的答案完全正确, 他/她正确地函数分解为简单函数的复合函数, 并且表达式也完全正确.	3.6 错误 学生的答案完全正确, 他/她正确地函数分解为简单函数的复合函数, 并且表达式也完全正确.

Collecting Data for Teachers	
是否正确	学生答案
错误	$y = f(x) = \sin(x)$ $y = g(x) = \ln x$ $y = h(x) = x^2$ $(f \circ g \circ h)(x) = f(g(h(x))) = \sin^2(\ln x)$.
错误 在定义 $f(x)$ 时, 学生答案中的 x 多余, 应该是 $f(x) = \arcsin x$.	
评价	是否正确
学生对于函数分解理解基本正确, 但存在对符号化“错误”, “错误”注意“ g ”定义的准确性.	错误

Students receive respect and learning efficiency is improved

Pilot Program Participant 2

Pilot 2: Wuhan Foreign Languages School



**Mark on Math Homework,
Correct: 221/240,
Accuracy: 88%**

Current system requires teachers to **manually correct** and then **take photos** into the system, which actually increases the burden.

The school's vice-principal stated:

"Our product has solved existing issues and has **practical value !"**

Thanks for listening!
Live Q&A