

【第 23 题】

- 1、知识与能力要求：抛物线的标准方程，解析几何中的基本运算
- 2、主要存在问题及错因

23. [必做题]

解: 1). 当 AB ⊥ x 轴时

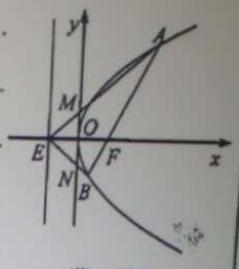
$A(\frac{p}{2}, p)$ $F = P$

$\therefore EA^2 = EF^2 + FA^2$

$= p^2 + p^2 = 2p^2 = 4p^2$

\therefore 抛物线: $y^2 = 2\sqrt{2}x$

$y^2 = 2\sqrt{2}x$



(第 23 题图)

2.0

一评: 4分 sx06

二评: 8分 sx071

1: 2分

2: 2分

1: 2分

2: 6分

1(2.0分)

2

2(6.0分)

提交

提交

2) 设 AB: $y = k(x - \frac{E}{2})$ $E(-\frac{E}{2}, 0)$

$y = kx - \frac{k}{2}$ $2y = 2kx - k$ $2kx - 2y - k = 0$

$d_{E \rightarrow AB} = \frac{|-2\sqrt{2}k|}{\sqrt{k^2+1}} = \frac{2\sqrt{2}|k|}{\sqrt{k^2+1}}$

$y = kx - \frac{k}{2}$ $y^2 = 2\sqrt{2}x$

$2k^2x^2 - (2\sqrt{2}k^2 + k\sqrt{2})x + \frac{k^2}{2} = 0$

$x_1 + x_2 = \frac{2\sqrt{2}k^2 + k\sqrt{2}}{2k^2}$ $x_1 x_2 = \frac{1}{2}$

$\therefore |x_1 - x_2| = \frac{\sqrt{(2\sqrt{2}k^2 + k\sqrt{2})^2 - 4k^2}}{2k^2} = \frac{\sqrt{8k^4 + 4\sqrt{2}k^3 + 2k^2 - 4k^2}}{2k^2} = \frac{\sqrt{8k^4 + 4\sqrt{2}k^3 - 2k^2}}{2k^2}$

$|x_1 - x_2| = \frac{\sqrt{2} \cdot \sqrt{4k^4 + 2\sqrt{2}k^3 - k^2}}{2k^2} \therefore S_1 = \frac{1}{2} \cdot \sqrt{2} \cdot \sqrt{4k^4 + 2\sqrt{2}k^3 - k^2} = \frac{\sqrt{2} \sqrt{4k^4 + 2\sqrt{2}k^3 - k^2}}{2k^2}$

$E(-\frac{E}{2}, 0)$ $A(x_1, y_1)$ $S_1 = \frac{1}{2} \cdot \sqrt{2} \cdot \sqrt{(x_1 - (-\frac{E}{2}))^2 + y_1^2}$

$y_1 = \frac{y_1}{k + \frac{1}{2}} (x_1 + \frac{2}{2})$ $S_2 = \frac{\sqrt{2} \sqrt{(x_1 + \frac{2}{2})^2 + y_1^2}}{2}$

$\therefore M(0, \frac{2y_1}{2x_1 + 2})$ $S_2 = \frac{\sqrt{2} \sqrt{(x_1 + 1)^2 + (\frac{2y_1}{2x_1 + 2})^2}}{2}$

$N(0, \frac{2y_2}{2x_2 + 2}) = \frac{\sqrt{2} \sqrt{(x_2 + 1)^2 + (\frac{2y_2}{2x_2 + 2})^2}}{2}$

$MN = \frac{y_1}{x_1 + 1} - \frac{y_2}{x_2 + 1} = \frac{(kx_1 - \frac{k}{2})(x_2 + 1) - (kx_2 - \frac{k}{2})(x_1 + 1)}{(x_1 + 1)(x_2 + 1)}$

$= \frac{kx_1x_2 + kx_1 - kx_2 - \frac{k}{2} - (kx_2x_1 + kx_2 - kx_1 - \frac{k}{2})}{2x_1x_2 + 2(x_1 + x_2) + 2} = \frac{2kx_1 - 2kx_2}{2x_1x_2 + 2(x_1 + x_2) + 2} = \frac{2k(x_1 - x_2)}{2x_1x_2 + 2(x_1 + x_2) + 2}$

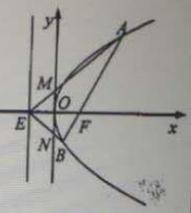
$S_2 = \frac{1}{2} \cdot \frac{2|x_1 - x_2|}{2x_1x_2 + 2(x_1 + x_2) + 2} = \frac{|x_1 - x_2|}{2x_1x_2 + 2(x_1 + x_2) + 2}$

$\therefore \frac{S_1}{S_2} \in [2, +\infty)$

- 打印
- 打印
- 半对
- 划线
- 划框
- 输入
- 清空
- 异常
- 优秀
- 典型
- 参考
- 放大
- 还原
- 缩小
- 背景
- 刷新

23. [必做题]

(1) $\frac{P}{2} = 2$
 $\therefore P = 4$
 $\therefore y = 8x$



(2) $P(2,0)$

设 $AB: x = my + 2$ $A(x_1, y_1)$ $B(x_2, y_2)$
 $\begin{cases} y = 8x \\ y = 8my + 6 \end{cases} \quad S_1 = 4x_1^2 |y_1 - y_2|$
 $y = 8my + 6 \quad = 2 |y_1 - y_2|$
 $y_1 y_2 = -6 \quad = 16 \sqrt{m^2 + 1}$

$y_1 + y_2 = 8m$
 $(y_1 - y_2)^2 = 64m^2 - 4(6)$
 $(y_1 - y_2)^2 = 64m^2 + 64$
 $|y_1 - y_2| = 8\sqrt{m^2 + 1} = 4(m+1)$
 $E(-2, 0) \quad m > 0$

$AE: y = \frac{y_1}{x_1 + 2}(x + 2) \quad \therefore \frac{S_1}{S_2} > 4$

$M(0, \frac{y_1}{x_1 + 2})$
 $N(0, \frac{y_2}{x_1 + 2})$

$MN = \left| \frac{y_1}{x_1 + 2} - \frac{y_2}{x_1 + 2} \right|$
 $= \frac{|y_1 - y_2|}{|x_1 + 2|}$
 $= \frac{|y_1 - y_2|}{2m^2 + 2}$

$S_2 = \frac{8\sqrt{m^2 + 1}}{2m^2 + 2} = \frac{4\sqrt{m^2 + 1}}{m^2 + 1}$

0.0

一评: 0分 sx065(祁正忠)
 1: 0分
 2: 0分
 二评: 8分 sx062(张凡)
 1: 0分
 2: 8分

1(2.0分)
 0 >>

2(8.0分)
 0 >>

提交
 提交 ▼

- 打印
- 打字
- 画对
- 划线
- 划框
- 输入
- 清空
- 异常
- 优秀
- 典型
- 参考
- 放大
- 还原
- 缩小
- 背景
- 刷新

23. [必做题]

1. $|AB| \times 4$ 倍

~~$A(-\frac{1}{2}, \frac{1}{2})$~~ $A(\frac{1}{2}, 1)$

$B(-\frac{1}{2}, 0)$

$\therefore k_{AB} = \frac{1-0}{\frac{1}{2}-(-\frac{1}{2})} = 2 \quad y = 2x$

$\therefore y^2 = 2\sqrt{2}x$

2. $|AB| \times 4$ 倍

$A(\frac{1}{2}, \sqrt{2})$

$B(\frac{1}{2}, -\sqrt{2})$

$|AB| = 2$

$M(0, \frac{1}{2}), N(0, -\frac{1}{2})$

$|MN| = 1$

$\therefore \frac{S_1}{S_2} = 4$

令 $AB: y = 2x + \frac{\sqrt{2}}{2}$

~~$(x - \frac{1}{2})^2 + (y - \frac{\sqrt{2}}{2})^2 = 1$~~ $y^2 = 2\sqrt{2}x + 2$

$x^2 - 2x + \frac{1}{4} + 2\sqrt{2}x + 2 = 0 \quad y^2 - 2\sqrt{2}xy + 2 = 0$

~~$(2x - 1)^2 + (2y - \sqrt{2})^2 = 4$~~ $y \cdot y = 2\sqrt{2}x + 2$

$x + x = \frac{1}{2} + \frac{\sqrt{2}}{2} \quad x + x = \frac{1}{2}$

$|x_1 - x_2| = \sqrt{\frac{1}{2} + \frac{1}{2}} = 1 \quad |y_1 - y_2| = \sqrt{2} \quad S_1 = \frac{1}{2} \times 1 \times \sqrt{2} = \frac{\sqrt{2}}{2}$

$|AB| = \sqrt{2} \quad |MN| = 1 \quad S_2 = \frac{1}{2} \times \sqrt{2} \times 1 = \frac{\sqrt{2}}{2}$

$d = \frac{|\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}|}{\sqrt{1+4}} = \frac{0}{\sqrt{5}} = 0$

$S_1 = \frac{1}{2} \times \sqrt{2} \times d = \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = \frac{1}{2}$

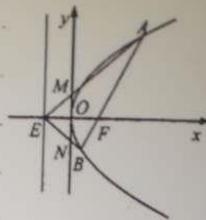
$S_2 = \frac{1}{2} \times \sqrt{2} \times 1 = \frac{\sqrt{2}}{2}$

$\frac{S_1}{S_2} = \frac{\frac{1}{2}}{\frac{\sqrt{2}}{2}} = \frac{1}{\sqrt{2}}$

$M(0, \frac{1}{2}), N(0, -\frac{1}{2})$

$|MN| = 1$

$|AB| \times 4 = 8$



(第 23 题图)

2.0

一评: 10分 sx087(葛)

二评: 8分

三评: 3分 sx068(沈)

一评: 2分

二评: 1分

1(2.0分)

2 >>

2(8.0分)

>>

提交

提交 ▼

请在各题目的答题区域内作答,超出黑色矩形边框限定区域的答案无效

- 打钩
- 打叉
- 半对
- 划线
- 划框
- 输入
- 清空
- 异常
- 优秀
- 典型
- 参考
- 放大
- 还原
- 缩小
- 背景
- 刷新

23. [必做题]

$$y = \sqrt{2}x$$

$$\frac{1}{2}x = \frac{p}{2} \quad y = \sqrt{2}x$$

$$AF = \sqrt{2}p, EF = p$$

$$1) y = \sqrt{2}x \quad \frac{1}{2}x = \frac{p}{2}, y = \sqrt{2}p$$

$$\therefore AF = EF = p$$

$$\therefore 2p = 4 \quad p = 2$$

$$\therefore y = 2\sqrt{2}x$$

$$2) \text{ 设 } l \text{ 的方程: } x = my + \frac{\sqrt{2}}{2} \quad A(x_1, y_1), B(x_2, y_2)$$

$$y = 2\sqrt{2}my + 2$$

$$y = 2\sqrt{2}my - 2 \quad \Delta = 8(m^2 + 1) > 0$$

$$y_1 + y_2 = 2\sqrt{2}m, y_1 y_2 = -2$$

$$|y_1 - y_2| = 2\sqrt{2}\sqrt{m^2 + 1}$$

$$S_1 = \frac{1}{2} \times \sqrt{2} \times 2\sqrt{2}\sqrt{m^2 + 1} = 2\sqrt{m^2 + 1}$$

$$S_2 = \frac{1}{2} \times \sqrt{2} \times \sqrt{2}\sqrt{m^2 + 1} = \sqrt{m^2 + 1}$$

$$k_{EB} = \frac{y_1}{x_1 + \frac{\sqrt{2}}{2}}$$

$$l_{EB}: y = \frac{y_1}{x_1 + \frac{\sqrt{2}}{2}}(x + \frac{\sqrt{2}}{2})$$

$$\text{令 } x = 0, y_M = \frac{\sqrt{2}y_1}{x_1 + \frac{\sqrt{2}}{2}}, \text{ 同理, } y_N = \frac{\sqrt{2}y_2}{x_2 + \frac{\sqrt{2}}{2}}$$

$$\begin{aligned} MN &= y_M - y_N = \frac{\sqrt{2}y_1}{x_1 + \frac{\sqrt{2}}{2}} - \frac{\sqrt{2}y_2}{x_2 + \frac{\sqrt{2}}{2}} \\ &= \frac{\sqrt{2}y_1(x_2 + \frac{\sqrt{2}}{2}) - \sqrt{2}y_2(x_1 + \frac{\sqrt{2}}{2})}{x_1x_2 + \frac{\sqrt{2}}{2}(x_1 + x_2) + \frac{1}{2}} \\ &= \frac{2(y_1 - y_2)}{x_1x_2 + \frac{\sqrt{2}}{2}(x_1 + x_2) + \frac{1}{2}} \end{aligned}$$

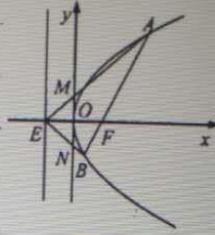
$$x_1 + x_2 = 2\sqrt{2}m + \sqrt{2}, x_1 x_2 = \frac{1}{2}$$

$$MN = \frac{2 \cdot 2\sqrt{2}\sqrt{m^2 + 1}}{2m^2 + 2} = \frac{2\sqrt{2}\sqrt{m^2 + 1}}{m^2 + 1}$$

$$S_2 = \frac{1}{2} \times \sqrt{2} \times \frac{2\sqrt{2}\sqrt{m^2 + 1}}{m^2 + 1} = \sqrt{\frac{1}{m^2 + 1}}$$

$$\frac{S_1}{S_2} = 2(m^2 + 1) \geq 2$$

$$\frac{S_1}{S_2} \geq 2$$



(第 23 题图)

2.0

一评: 2分 sx064(李正章)

1: 2分
2: 0分

二评: 6分 sx069(王友春)

1: 2分
2: 4分

1(2.0分)

2

2(8.0分)

提交

提交

请在各题目的答题区域内作答,超出黑色矩形框限定区域的答案无效

第一问：本小题相对而言得分较高，共计 2 分，属于绝对基础题，大部分考生都能写对，极少部分学生运算错误

第二问：本文建立在第一问基础上，需要表示出两个面积，并发现他们的内在联系值得肯定的成绩：

1 基础题的得分稳定，学生对综合性的试题还不够适应，但从答卷上看，大部分学生对基础题的得分还可以，各校对基础题型基本方法的训练初见成效。

2 理科数学附加题的价值取向得到各学校的认同，附加前两题均分都在 8 分以下，附加题对总分的支撑力得到了加强。

3、教学策略：

1、要强化解析几何运算的训练，要规范答案的书写，强化“及时校验”意识。要把每日小题练系列化、常态化。

2、落实规定动作，挑战自选动作。

应作为各学校的必须达标的规定动作，研究高考试题和考试说明，以落实和达成为目标，以示范和规范为手段，重视细节，滚动训练。推敲说明要求，细化附加分达成。

3、区别训练功能，理性面对应试。要区别专项训练与综合模拟的不同功能，控制综合训练的频率。认真组织仿真综合训练，要求学生有意识地运用应试的策略和技巧，并及时调整自己的应试心理；让学生总结应试的经验与不足，并提出自我改进方法。继续完善和落实三个层次的基础百题的研发和使用，使每一位学生都能处理好审题与解题、会做与得分、快与准、难与易的关系。要让每一位学生都找到最适合自己的应试方法。