

七中育才初2013级九年级(上)十月测试

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A卷.

一. 选择题

题号	1	2	3	4	5	6	7	8	9	10
答案	C	C	D	B	A	C	D	A	B	D

二. 填空题

11. < 12. $-\sqrt{5}$ 13. $y = -\frac{2}{x}$ 14. 12.

三. 15 (1) 解: 原式 = $1 + \frac{1}{2} - 1 - \frac{1}{4} - 1$
 $= 1 + \frac{1}{2} - \frac{1}{4} - 1$
 $= \frac{1}{4}$

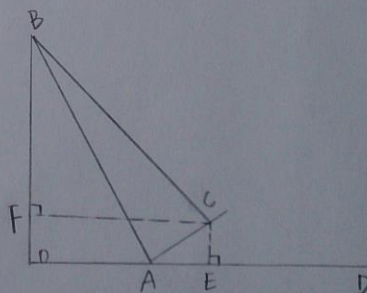
(2) 解: 原式 = $(1 - \frac{1}{a+1}) \cdot \frac{a+1}{a(a-1)}$
 $= \frac{a}{a+1} \cdot \frac{a+1}{a(a-1)}$
 $= \frac{1}{a-1}$
 当 $a = 1 + \sqrt{3}$ 时, $\frac{1}{a-1} = \frac{1}{1 + \sqrt{3} - 1} = \frac{\sqrt{3}}{3}$

16. 解: $(2x-1)^2 - 2(2x-1) - 8 = 0$
 $[(2x-1)-4][(2x-1)+2] = 0$
 $(2x-5)(2x+1) = 0$
 $x_1 = \frac{5}{2}, x_2 = -\frac{1}{2}$

四. 解答题

17. (1) $\because \angle BAO = 60^\circ, OA = 200m$
 $\therefore OB = OA \cdot \tan \angle BAO = 200 \cdot \tan 60^\circ = 200\sqrt{3}m$

(2) 过点C作 $CE \perp OD, CF \perp OB$
 $\therefore \frac{1}{\sqrt{3}} = \tan \angle CAE$
 $\therefore \angle CAE = 30^\circ$
 设 $CE = x$, 则 $AE = \sqrt{3}x, OE = 200 + \sqrt{3}x$
 $\because \angle BCF = 45^\circ$
 $\therefore BF = CF = OE = 200 + \sqrt{3}x$
 $\therefore BF = OB - OF = 200\sqrt{3} - x$
 $\therefore 200 + \sqrt{3}x = 200\sqrt{3} - x$
 解得 $x = 400 - 200\sqrt{3}$
 $\therefore AC = 2CE = 2x = 800 - 400\sqrt{3}m$



18. (1) 解: 设每千克降价 x 元.

$$\text{由题意得: } (60-x-40)(\frac{x}{2} \cdot 20 + 100) = 2240$$

$$x^2 - 10x + 24 = 0$$

$$(x-4)(x-6) = 0$$

$$x_1 = 4, x_2 = 6.$$

答: 每千克应降价 4 元或 6 元.

(2) $\because$ 让利于顾客, $\therefore$ 降价 6 元.

$$\therefore \text{降价 } 60 - 6 = 54 \text{ 元}$$

$$\frac{54}{60} \times 100\% = 90\% = 9 \text{ 折}$$

答: 按原价格的 9 折出售.

19. 解 (1) 过 A 作 $AE \perp OC$ 于点 E.

在 $Rt\triangle AOC$ 中, $\angle AOC = 30^\circ$, $OA = 8\sqrt{3}$

$$\therefore OC = OA \cdot \cos 30^\circ = 8\sqrt{3} \times \frac{\sqrt{3}}{2} = 12.$$

$$AC = OA \cdot \sin 30^\circ = 8\sqrt{3} \times \frac{1}{2} = 4\sqrt{3}$$

$$\therefore A(12, 4\sqrt{3})$$

设直线 OA 的解析式为 $y = kx$

$$\therefore 4\sqrt{3} = 12k$$

$$k = \frac{\sqrt{3}}{3}$$

$$\therefore y = \frac{\sqrt{3}}{3}x$$

(2) 设抛物线的解析式为 $y = a(x-h)^2 + k$

$\because$ B 为顶点且为 $(9, 12)$

$$\therefore y = a(x-9)^2 + 12.$$

又 $\because$ 过 $(0, 0)$

$$\therefore 0 = 81a + 12$$

$$a = -\frac{4}{27}$$

$$\therefore y = -\frac{4}{27}(x-9)^2 + 12$$

$$= -\frac{4}{27}x^2 + \frac{8}{3}x$$

(3) 当 $x = 12$ 时.

$$y = -\frac{4}{27} \times 12^2 + \frac{8}{3} \times 12.$$

$$= \frac{22}{3} + 4\sqrt{3}$$

$\therefore$ A 不在抛物线 $y = -\frac{4}{27}x^2 + \frac{8}{3}x$ 上.

$\therefore$ 小明不能将球打入球洞.



20. 证明 (1) $\because$ 四边形 $ABCD$ 为等腰梯形

$$\therefore \angle BAD = \angle CDA, AB = DC$$

$$\because AD = CD, DE = CF$$

$$\therefore AB = AD, AD + DE = CD + CF$$

在 $\triangle BAE$ 和 $\triangle DCF$ 中

$$\begin{cases} AB = AD \\ \angle BAD = \angle CDA \\ AE = DF \end{cases}$$

$$\therefore \triangle BAE \cong \triangle DCF \text{ (SAS)}$$

$$\therefore BE = CF$$

(2) 结论: $\angle BPF = 120^\circ$

$$\because AE \parallel BC$$

$$\therefore \angle AEB = \angle ECB, \angle EAF = \angle ABB$$

$$\because \triangle BAE \cong \triangle DCF$$

$$\therefore \angle AEB = \angle DFC$$

$$\therefore \angle DFC = \angle ECB$$

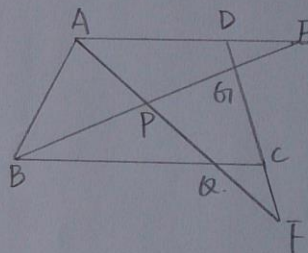
$$\therefore \triangle BCP \sim \triangle FAD$$

$$\therefore \angle BPF = \angle ADC$$

$$\because \angle C = 60^\circ$$

$$\therefore \angle ADC = 120^\circ$$

$$\therefore \angle BPF = 120^\circ$$



(3) 结论: $\triangle PEF$ 不能为等边 $\triangle$.

假设 $\triangle PEF$ 为等边 $\triangle$.

$$\because \angle BPF = 120^\circ$$

$$\therefore \angle EPF = 60^\circ, PE = PF$$

$$\because \triangle BAE \cong \triangle DCF$$

$$\therefore BE - PE = CF - PF$$

$$\therefore AP = BP$$

$$\therefore \angle ABP = 60^\circ$$

$$\because \angle ABC = 60^\circ$$

$$\text{而 } \angle ABC > \angle ABP$$

$$\therefore \text{假设不成立.}$$

$$\therefore \triangle PEF \text{ 不能为等边 } \triangle.$$

B卷

一. 填空题

21. 2008 22. $x_1=3, x_2=-1$ 23. $(-1, 0)$ 或 $(3, 0)$ 24. 12 25. $(36, 0)$

二. 26(1) 解: 当 $x=-1$ 时, $2 \times (-1)^2 + 4 \times (-1) + m = 0$
 $m=2$

23题注意分类讨论.

$$\therefore 2x^2 + 4x + 2 = 0$$

$$2(x+1)^2 = 0$$

$$\therefore x_1 = x_2 = -1$$

$$(2) \because \Delta = 4^2 - 4 \times 2 \times m = 16 - 8m > 0$$

$$\therefore m < 2$$

$$\text{又} \because x_1 + x_2 = -2, x_1 \cdot x_2 = \frac{m}{2}$$

$$\therefore x_1^2 + x_2^2 - x_1 \cdot x_2 - x_1^2 x_2^2 = 0$$

$$(x_1 + x_2)^2 - 3x_1 x_2 - (x_1 x_2)^2 = 0$$

$$(-2)^2 - 3 \cdot \frac{m}{2} - \left(\frac{m}{2}\right)^2 = 0$$

$$m^2 + 6m - 16 = 0$$

$$(m+8)(m-2) = 0$$

$$\therefore m_1 = -8, m_2 = 2$$

$$\therefore m < 2$$

$$\therefore m = -8$$

三. 27 (1) 证明: $\because \triangle BCD$ 为等腰 $\text{Rt}\triangle$.

$$\therefore \angle DCB = \angle DCF = 90^\circ$$

在 $\triangle BCE$ 和 $\triangle DCF$ 中

$$\begin{cases} BC = DC \\ \angle DCB = \angle DCF \\ CE = CF \end{cases}$$

$$\therefore \triangle BCE \cong \triangle DCF \text{ (SAS)}$$

$$(2) DG = \frac{1}{2} BF$$

$\because \triangle BCD$ 为等腰 $\text{Rt}\triangle$.

$$\therefore \angle DBC = \angle BDC = 45^\circ$$

又 $\because BE$ 平分 $\angle DBC$

$$\therefore \angle DBE = \angle FBE = 22.5^\circ$$

$$\therefore \angle BEC = 67.5^\circ$$

又 $\because \triangle BCE \cong \triangle DCF$

$$\therefore \angle BEC = \angle EDC = 67.5^\circ, \angle BDF = \angle BDC + \angle CDF$$

$$\therefore \angle EDC = \angle FDC = 22.5^\circ$$

$$\therefore \angle DGB = 90^\circ, \angle BDF = \angle BFD$$

$$\therefore BD = BF$$

$\therefore G$ 为 DF 的中点

$$\therefore DG = \frac{1}{2} BF$$

(3) $\because \angle CDF = \angle EBC$, BE 平分 $\angle DBC$

$$\therefore \angle DBG = \angle FDC = \angle GBF$$

$$\text{又} \because \angle DGB = \angle DGB$$

$$\therefore \triangle DGE \sim \triangle BGD$$

$$\therefore \frac{DG}{BG} = \frac{GE}{DG}$$

$$\therefore DG^2 = BG \cdot GE = 4 \cdot 2\sqrt{2}$$

$$\text{设 } BC = a, \text{ 则 } DC = a, BD = \sqrt{2}a$$

$$\therefore BD = BF$$

$$\therefore CF = \sqrt{2}a - a$$

$$\therefore DF^2 = DC^2 + CF^2 = a^2 + (\sqrt{2}a - a)^2$$

$$\text{又} \because DF = 2DG$$

$$\therefore DF^2 = 4DG^2$$

$$a^2 + (\sqrt{2}a - a)^2 = 4(4 \cdot 2\sqrt{2})$$

$$\therefore a = 2$$

$$\therefore BC = 2, BF = \sqrt{2}a = 2\sqrt{2}$$

$$\therefore S_{\triangle BDF} = \frac{1}{2} BF \cdot CD = 2\sqrt{2} \cdot 2 \cdot \frac{1}{2} = 2\sqrt{2}$$

$$\therefore \triangle DCG \sim \triangle DBF$$

$$\therefore \frac{S_{\triangle DCG}}{S_{\triangle DBF}} = \left(\frac{DG}{BF}\right)^2$$

$$\therefore \frac{S_{\triangle DCG}}{2\sqrt{2}} = \frac{1}{4}$$

$$\therefore S_{\triangle DCG} = \frac{\sqrt{2}}{2}$$

四. 28. 解 (1) 设抛物线的解析式为 $y = a(x+2)(x-4)$

$$\because C(0, -4)$$

$$\therefore -4 = -8a$$

$$\therefore a = \frac{1}{2}$$

$$\therefore y = \frac{1}{2}(x+2)(x-4)$$

$$= \frac{1}{2}x^2 - x - 4$$

$$\therefore y = \frac{1}{2}x^2 - x - 4 = \frac{1}{2}(x-1)^2 - \frac{9}{2}$$

$$\therefore D(1, -\frac{9}{2})$$

(2) $\triangle EBC$ 为等腰 $\triangle$.

$$\therefore \begin{cases} y = -x \\ x = 1 \end{cases}$$

$$\therefore E(1, -1)$$

$$\therefore BE = \sqrt{(4-1)^2 + (0+1)^2} = \sqrt{10}$$

$$CE = \sqrt{(0-1)^2 + (-4+1)^2} = \sqrt{10}$$

$$\therefore BE = CE$$

$\therefore \triangle EBC$ 为等腰 $\triangle$.

(3) 设 $P(m, -m)$, $F(m, \frac{1}{2}m^2 - m - 4)$

$$\therefore ED = \frac{9}{2} - 1 = \frac{7}{2}$$

$$\therefore PF = ED$$

$$\therefore |\frac{1}{2}m^2 - m - 4 + m| = \frac{7}{2}$$

$$\therefore |\frac{1}{2}m^2 - 4| = \frac{7}{2}$$

$$\therefore \frac{1}{2}m^2 - 4 = \pm \frac{7}{2}$$

$$\text{当 } \frac{1}{2}m^2 - 4 = \frac{7}{2}$$

$$m = \pm\sqrt{15}$$

$$\text{当 } \frac{1}{2}m^2 - 4 = -\frac{7}{2}$$

$$m = \pm 1$$

$$\therefore P_1(\sqrt{15}, -\sqrt{15}), P_2(-\sqrt{15}, \sqrt{15}), P_3(1, -1) (\text{舍}), P_4(-1, 1)$$