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Mecanico industrial 10-10-12

1. Calcula el area y perimetro de los triangulos con los sig vertices:

a) (2,7), (6,10), (12,4)

b) (-4,0), (0,6), (4,-4)

P1, P2

$D=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$D=\sqrt{(6-2)^2+(10-7)^2}$

$D=\sqrt{(4)^2+(3)^2}$

$D=\sqrt{16+9}$

$D=\sqrt{25}$

$D=5$

P1, P3

$D=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$D=\sqrt{(12-2)^2+(1-7)^2}$

$D=\sqrt{(10)^2+(-6)^2}$

$D=\sqrt{100+36}$

$D=\sqrt{22}$

$D=4.6$

P2, P3

$D=\sqrt{(12-6)^2+(1-10)^2}$

$D=\sqrt{(6)^2+(-9)^2}$

$D=\sqrt{36+81}$

$D=\sqrt{117}$ $D=10.8$

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Perímetro: $5 + 4.6 + 10.8 = 20.4$

$$\text{Área} = \frac{1}{2}\det\begin{vmatrix} 2 & 7 \\ 6 & 10 \\ 12 & \end{vmatrix}$$

$= \frac{1}{2}|(2)(10) + (6)(1)|$

$= \frac{1}{2}|(6)(7) + (12)(10)|$

$= \frac{1}{2}|[20 + 6] - [42 + 120]|$

$= \frac{1}{2}|[26] - [162]|$

$= \frac{1}{2}|-136|$

$= 68u^2$

Área

$68u^2$

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B) $(-4, 0), (0, 6), (4, -4)$

P_1 P_2 P_3

$D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$D = \sqrt{(0 - (-4))^2 + (6 - 0)^2}$

$D = \sqrt{16 + 36}$

$D = \sqrt{52}$

$D = 7.2$

$D = \sqrt{(4 - (-4))^2 + (-4 - 0)^2}$

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

$D = \sqrt{(8)^2 + (4)^2}$

$D = \sqrt{64 + 16}$

$D = \sqrt{80}$

$D = 8.9$

$D = \sqrt{(4 - 0)^2 + (-4 - 6)^2}$

$D = \sqrt{(4)^2 + (10)^2}$

$D = \sqrt{16 + 100}$

$D = \sqrt{116}$

$D = 10.7$

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Perimetro = 7.2 + 8.9 + 10.7 = 26.8

$$Area = \frac{1}{2}\begin{vmatrix} -4 & 0 \\ 0 & 6 \\ 4 & -4 \end{vmatrix}$$

$= |(-4)(6) + (0)(-4)|$
$= |(0)(0) + (4)(6)|$
$= |(-18) + (-0)|$
$= (0) + (18)$
$= 18 - 18$
$= 36$
$= 18$

Area = 18

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2 Calcula el area y perimetro del paralelogramo cuyos vertices son:

A(-1, -1), B(4, -1), C(5, 2), D(0, 2)

$$DAB = \sqrt{(4-(-1))^2 + (-1-(-1))^2}$$
$$DAB = \sqrt{(4+1)^2 + (-1+1)^2}$$
$$DAB = \sqrt{(5)^2 + (0)^2}$$
$$DAB = \sqrt{25+0}$$
$$DAB = \sqrt{34}$$
$$DAB = 5.8$$

$$DBC = \sqrt{(5-4)^2 + (5-(-1))^2}$$
$$DBC = \sqrt{(1)^2 + (5+1)^2}$$
$$DBC = \sqrt{1+12}$$
$$DBC = \sqrt{13}$$
$$DBC = 3.6$$

$$DCD = \sqrt{(0-5)^2 + (2-2)^2}$$
$$DCD = \sqrt{(-5)^2 + (0)^2}$$
$$DCD = \sqrt{25+0}$$
$$DCD = \sqrt{25}$$
$$DCD = 5$$

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$$DDA=\sqrt{(-2-0)^2+(2-[-1])^2}$$
$$DDA=\sqrt{(-1)^2+(2+1)^2}$$
$$DDA=\sqrt{1+9}$$
$$DDA=\sqrt{10}$$
$$DDA=3.1$$

Perimetro = $3.1+5.8+3.6+5=17.5$

$$Area=\frac{1}{2}\det\begin{vmatrix}-1 & -1\\ 4 & -1\\ 5 & 2\\ 0 & 2\\ -1 & -1\end{vmatrix}$$

$$A=\frac{1}{2}(1.+8+10-0+4+5-0+2)$$
$$A=\frac{1}{2}(30)=\frac{1}{2}(30)=15\,u^2$$

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3 Calcula el área del polígono con vértices (4,4), (-3,2), (3,-2), (-5,3)

$$A=\frac{1}{2}\begin{vmatrix} 4 & 4 \\ -3 & 2 \\ 3 & -2 \\ -5 & 3 \\ 4 & 4 \end{vmatrix}$$

$$A=\frac{1}{2}((4)(2)+(-3)(-2)+(3)(3)+(-5)(4))$$

$$A=\frac{1}{2}((-3)(4)+(3)(2)+(-5)(-2)+(4)(4))$$

$$A=\frac{1}{2}(8+6+9-20)-(-12+6+10+16)$$

$$A=\frac{1}{2}(3)-(38)$$

$$A=\frac{1}{2}-35$$

$$A=-\frac{1\times 35}{2(1)}=\frac{35}{2}=17.5u^2$$

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$$A=\frac{1}{2}\begin{vmatrix} 4 & 4 \\ -5 & 3 \\ 3 & -2 \\ -3 & 2 \\ 4 & 4 \end{vmatrix}$$

$$A=\frac{1}{2}((4)(3)+(-5)(-2)+(3)(2)+(-3)(4)$$

$$A=\frac{1}{2}(-5)(4)+(3)(3)+(-3)(-2)+(4)(2)$$

$$A=\frac{1}{2}(12+10+6-12)-(-20+9+6+8)$$

$$A=\frac{1}{2}(16)-(3)$$

$$A=\frac{1}{2}=13$$

$$A=\frac{13\times 1}{2(1)}=\frac{13}{2}=6.5u^2$$

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Perimetro = 7.2 + 8.9 + 10.7 = 26.8

$$Area = \frac{1}{2}\begin{vmatrix} -4 & 0 \\ 0 & 6 \\ 4 & -4 \end{vmatrix}$$

$$= |(-4)(6) + (0)(-4)|$$
$$= |(0)(0) + (4)(6)|$$
$$= |(-18) + (-0)|$$
$$= (0) + (18)$$
$$= 18 - 18$$
$$= 36$$
$$= 18$$

Area = 18