

Section 8.4

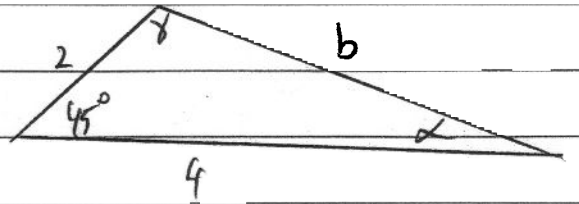
Dr. ZABDANE

#5)

$$Area = \frac{1}{2} (2 \times 4 \times \sin 45^\circ)$$

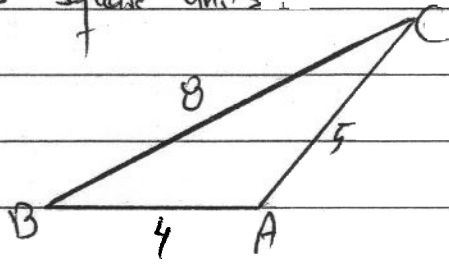
$$= \frac{1}{2} (2 \times 4 \times \frac{\sqrt{2}}{2}) = 2\sqrt{2}$$

$$= 2.83 \text{ square units.}$$



#10)

SSS



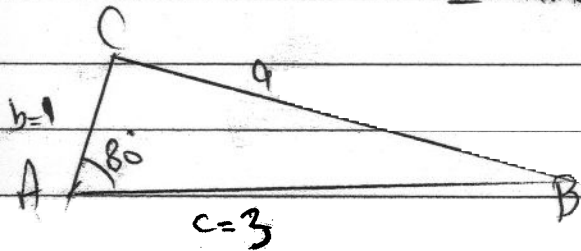
$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

where $s = \frac{1}{2} (a+b+c)$

$$s = \frac{1}{2} (8+4+5) = 8.5$$

$$A = \sqrt{8.5(8.5-4)(8.5-5)(8.5-8)} = \sqrt{8.5 \times 4.5 \times 3.5 \times 0.5} = 8.18 \text{ square units.}$$

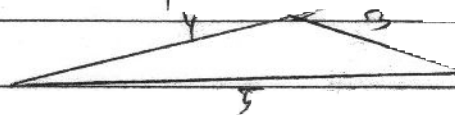
#15)



$$A = \frac{1}{2} (3 \times 1 \times \sin 180^\circ) = 1.48 \text{ square units}$$

#20)

$$s = \frac{1}{2} (3+4+5) = 6$$



$$A = \sqrt{6(6-3)(6-4)(6-5)} = \sqrt{6 \times 3 \times 2 \times 1} = \sqrt{36}$$

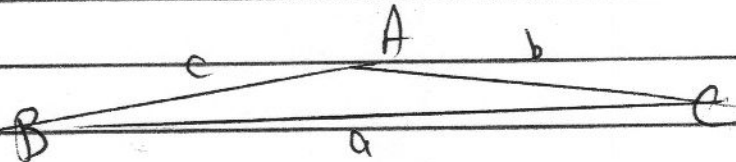
$$= 6 \text{ square units}$$

Section 8.4

Dr. ZABDANE

25) Prove that the area A of a triangle is given by the formula

$$A = \frac{a^2 \sin B \sin C}{2 \sin A}$$



$$\text{Area} = \frac{1}{2} ac \sin B$$

From Law of Sines we know:

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\Rightarrow b = a \frac{\sin B}{\sin A}, \quad c = a \frac{\sin C}{\sin A}$$

Substitute into Area

$$\Rightarrow \text{Area} = \frac{1}{2} a \times a \frac{\sin C}{\sin A} \times \sin B$$

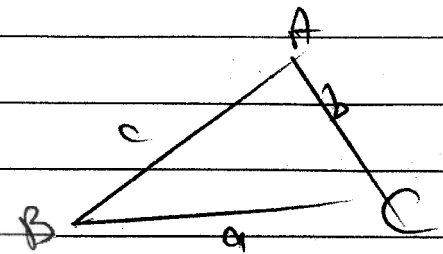
$$= \frac{1}{2} a^2 \frac{\sin B \times \sin C}{\sin A}$$

$$= \frac{a^2 \sin B \sin C}{2 \sin A}$$

Section 84

1) On 3ABDANT

30) $\alpha = 70^\circ, \beta = 60^\circ, c = 4$



$$b = a^2 \frac{\sin B \sin C}{2 \sin A}$$

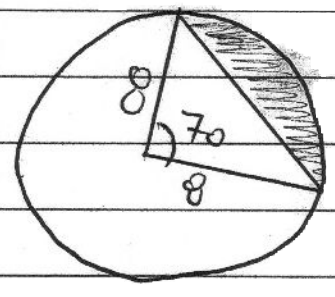
$$= b^2 \frac{\sin A \sin C}{2 \sin B} = c^2 \frac{\sin B \sin A}{2 \sin C}$$

$A = 70^\circ, B = 60^\circ \rightarrow C = 180^\circ - (70 + 60) = 50^\circ$

∴ Area = $\frac{c^2 \sin B \sin A}{2 \sin C} = \frac{16 \sin 60^\circ \sin 70^\circ}{2 \sin 50^\circ}$
 = 8.5 Square Units.

33) Area of Shaded Area

= Area of Sector - Area of triangle



$70^\circ = \frac{70^\circ}{180^\circ} \times \pi = \frac{7\pi}{18}$ radians.

Area of Sector = $\frac{1}{2} r^2 \theta$ rad = $\frac{1}{2} \times (8)^2 \times \frac{7\pi}{18} = \frac{112\pi}{9}$

Area of Triangle = $\frac{1}{2} (8) \cdot (8) \times \sin 70^\circ$

= $32 \sin 70^\circ$

⇒ Shaded Area = $\frac{112\pi}{9} - 32 \sin 70^\circ = 9.03$ Square Units.
 = 9.03 A²