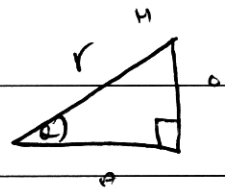
Question 10

BOARD OF STUDIES
NEW SOUTH WALES

Q10

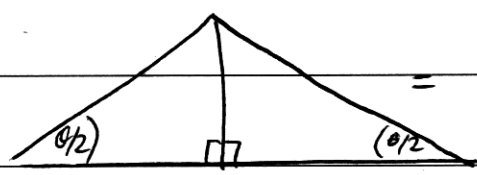
a).



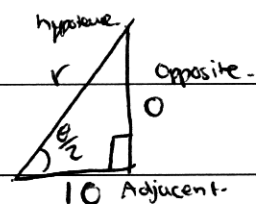
i) $r = 10 \sec \frac{\theta}{2}$

$r = \frac{20}{2} = 10$ due to Centre circle bisecting at Midpoint of 20

$\angle \theta = \frac{\theta}{2}$ This due to congruent Δ's:



= congruent Δ's: same angle of $\theta/2$.

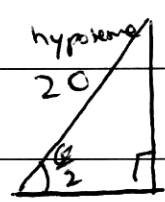


$\sec = \frac{dy}{dx}$ tan x. $\frac{dy}{dx} \frac{O}{A} = \sec$

$\therefore 10 \sec \frac{\theta}{2} = r.$

ii) $r = 20 \sin \frac{\theta}{2}$

Due to



$\sin = \frac{O}{H} = \frac{r}{20} = \sin \frac{\theta}{2}$

$\therefore r = 20 \times \sin \frac{\theta}{2}.$

BOARD OF STUDIES
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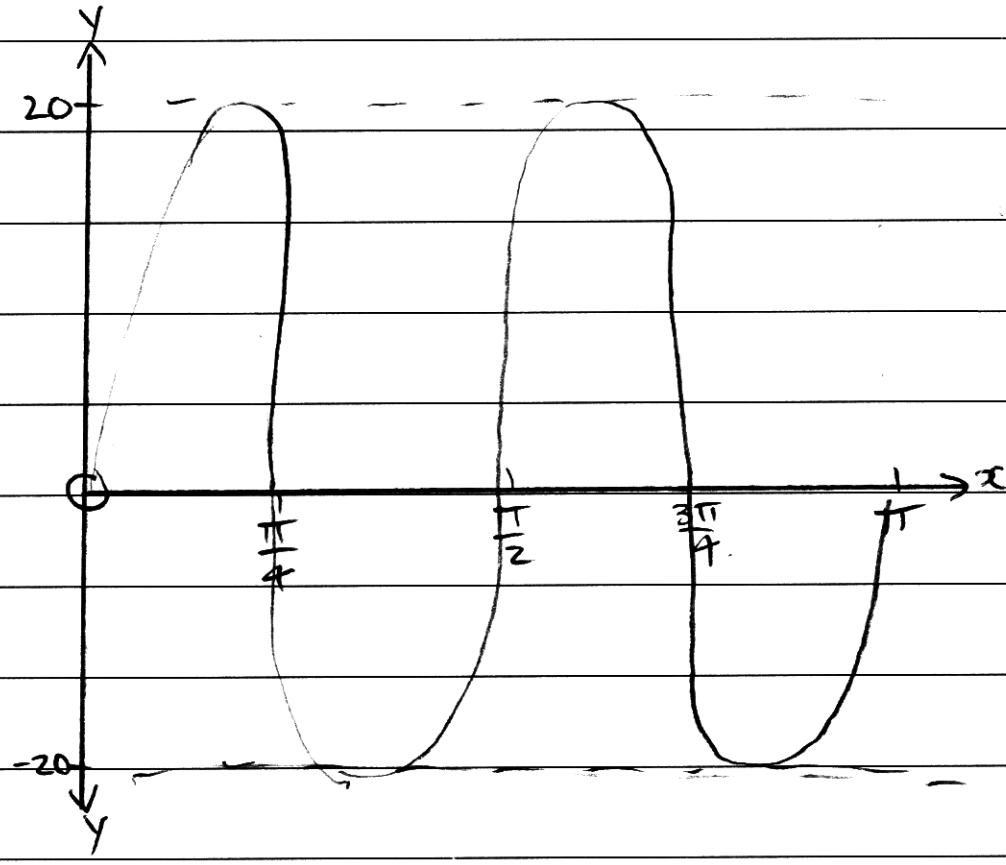
Q10)

a). iii) Graph $r = 20\sin\frac{\theta}{2}$ & $r = 10\sec\frac{\theta}{2}$



10) b).